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Appointment and Tenure of Faculty of Professorial Rank*

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The subject which I present was close to the heart of the late Maurice H. Rees, and his correspondence files show the interest which many others had in the divers problems it entails. Letters from several of those present and from others encouraged him to plan to present his studies at this meeting. It is regretted that he did not live to do so. In fact, nothing was done by him on the returns from the questionnaires, Table 1, which he sent out. This questionnaire

TABLE 1
DATA ON SCHOOL OF MEDICINE FACULTY

		Faculty: Clinical Depts.			Basic Science Depts.		
		Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
1. Annual Salary 12 mos. Full time	Low						
	Top						
2. Total in each rank Number.....							
3. Annual Salary Part time ½ time or more	Low						
	Top						
4. Total in each rank Part time Number.....							
5. Are full time men permitted to do private practice?†							
6. Are full time men permitted to do consultation work?‡							
7. When do appointments become permanent? (Year of service.)							
8. Is non-salaried faculty appointed annually? If not, give period.							

† 5. Private Practice: Complete care of patient.
‡ 6. Consultation Practice: Seeing a patient at request of another physician and withdrawing from case after opinion is given.

* Read at the Fifty-sixth Annual Meeting of the Association of American Medical Colleges, held in Pittsburgh, Pennsylvania, October 29-31, 1945.

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9. Refer to Question 5 above. If answer to No. 5 is Yes, who gets the fee?
(a) Faculty Member..... (b) General Fund of School.....
(c) Hospital..... (d) Research Fund..... (e) Other.....
Explain .....

10. Explain how private practice is limited.....

11. Are basic science teachers permitted to do private practice?.....
or other outside work for pay?.....
If answer is Yes, explain how such work is limited.....

12. Refer to Question 6 above. If answer to No. 6 is Yes, who gets the fee?
(a) Faculty Member..... (b) General Fund of School.....
(c) Hospital..... (d) Research Fund..... (e) Other.....
Explain .....

13. Have you increased salaries within the past four years to meet increased living costs?
Yes..... No..... Percental increase.....

14. Do you give retirement assistance to your faculty?.....

15. Describe Retirement Plan .....

16. Do you have an established salary scale?.....
If so, give scale:

	Faculty Clinical Depts.		Faculty Basic Science Depts.	
	Starting	Top	Starting	Top
Professor & Head of Dept.	.....	.....	.....	.....
Professor	.....	.....	.....	.....
Associate Professor	.....	.....	.....	.....
Assistant Professor	.....	.....	.....	.....

17. Do you have an established time limit that a man must remain in a given rank before he is eligible for promotion? .....
If so, give the limits.....

18. Indicate by numbers (1 to 8) the relative importance of the following in making appointments or promotions:
a. Teaching effectiveness .....
b. Knowledge of subject .....
c. Contribution through research and publication .....
d. Rate of professional growth (current) .....
e. Recognition (national) by others in his profession .....
f. General knowledge and range of interest .....
g. Ability to cooperate with other members of department and school .....
h. Value to community or state .....

19. Is there any attempt on the part of your University to keep Basic Science salaries on a par with other Schools of the University? .....
Salaries of the Clinical Departments? .....

20. If there is a salary differential with other Schools of the University, what is the percental difference for the Basic Science Faculty? .....
Clinical Departments Faculty .....

Additional Remarks:

was his work on which he spent many long hours and much thought. It was my privilege to be close to him on this project up to the time of his death largely because of controversies which had arisen between our local county medical society, the state medical society and our School of Medicine. Dr. Rees included in this questionnaire several of the disputed points.

The questionnaires were sent out early last spring to the Deans of the 68 four year medical schools of the continental United States. To date, 57, or 84 per cent, have been returned partially or wholly filled out. The survey was to have been confidential, and we have adhered strictly to this idea, although the majority of the reports returned have been signed. I consider this a tribute to Dr. Rees and a measure of the esteem in which he was held by the members of this Association.

The questionnaire has 20 questions which I have arranged in several groups because of similarity in subject matter. The first group considers the salary problem of the faculty members of professorial rank. Table 2 shows the data obtained

TABLE 2.—FACULTY SALARIES.

(68 Questionnaires sent)
12 mo. — Full Time

	Clinical Departments			Basic Science Departments		
	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
SCALE—low						
No. of reports	(44)	(34)	(37)	(52	(52)	(49)
Mean	$ 6,237	$ 4,276	$ 3,198	$ 5,541	$ 3,857	$ 2,979
RANGE—low	1,000	1,200	600	1,000	2,000	1,300
—high	12,500	7,000	5,000	9,000	6,000	4,000
SCALE—top						
No. of reports	(47)	(39)	(43)	(51)	(53)	(50)
Mean	$ 9,317	$ 6,162	$ 4,462	$ 8,142	$ 5,049	$ 4,262
RANGE—low	3,000	3,315	1,300	3,315	3,000	3,000
—high	15,000	10,000	8,000	12,000	7,500	6,000

for the three different ranks in both the clinical and the basic science departments. The number of reports received for the several headings are sufficient to consider the figures obtained as a fairly true picture for all the medical schools of the country that are members of this Association. This is not so true of the salaries of the half time faculty group (Table 3). In the basic science departments half time faculty members are very few in numbers, so the data received were

TABLE 3.—FACULTY SALARIES.

Part Time — ½ Time or More

	Clinical Departments			Basic Science Departments		
	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
SCALE—low						
No. of reports	(25)	(21)	(27)	13 submitted		
Mean	$ 1,831	$ 1,734	$ 1,264	partial returns		
RANGE—low	100	100	100			
—high	3,300	3,739	3,000			
SCALE—top						
No. of reports	(31)	(23)	(30)			
Mean	$ 4,483	$ 2,885	$ 2,115			
RANGE—low	1,000	175	50			
—high	8,000	6,000	6,500			

not tabulated. The part time faculty members of the clinical departments are much more numerous, and the data obtained gave an opportunity for comparison with that given for the full time faculty members, and particularly the extremes in the range of both low and high salary groups.

Twenty-six of the 57 schools making reports state that they had an established faculty salary scale and data more or less complete are shown in Table 4. It is quite apparent that the scale applies to the basic science departments more definitely than to the clinical departments. Salary differentials within the same rank of the different groups for either the starting or top scale is not striking. And this rather close approximation in the figures shows even with the high and low range values.

Questions No. 19 and No. 20 deal with salary differentials which may exist between the Schools of Medicine and the other schools of the universities, and these will be taken up together. Considering first the basic science departments

TABLE 4.—ESTABLISHED FACULTY SALARY SCALE.

	Clinical Departments				Basic Science Departments			
	Prof. and Head	Prof.	Assoc. Prof.	Asst. Prof.	Prof. and Head	Prof.	Assoc. Prof.	Asst. Prof.
SCALE—starting								
No. of reports	(18)	(15)	(15)	(16)	(20)	(20)	(24)	(23)
Mean	$ 6,542	$ 5,643	$ 4,378	$ 3,226	$ 6,297	$ 5,758	$ 4,076	$ 3,066
RANGE—low	3,315	4,000	3,200	2,500	4,200	4,500	3,250	2,400
—high	12,000	8,000	7,000	4,500	8,000	8,500	6,000	4,000
SCALE—top								
No. of reports	(17)	(15)	(14)	(15)	(20)	(20)	(22)	(22)
Mean	$ 9,630	$ 8,046	$ 5,775	$ 4,842	$ 8,281	$ 7,226	$ 5,372	$ 4,271
RANGE—low	3,315	4,200	3,900	3,000	5,625	4,200	3,900	3,000
—high	15,000	12,000	10,000	7,500	12,000	12,000	10,000	7,500

of the 55 reports, 19 schools state that attempts are made to have salaries alike for the different schools of their university. Twenty-seven reports state that such attempts are not made, and that the medical school salaries are higher an indefinite amount, or from 10% to 48.5% above the other schools. Two schools have no University connections, and one has a flat salary regardless of rank. Nine reports state that the information is not known, or is confidential.

TABLE 5.—TOTAL FACULTY MEMBERS IN EACH RANK.

	Clinical Departments			Basic Science Departments		
	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
FULL TIME						
No. of reports	(50)	(50)	(50)	(52)	(52)	(52)
Faculty members	388	336	468	407	286	327
Mean	7.8	6.7	9.4	7.8	5.5	6.3
RANGE—low	0	0	0	3	0	0
—high	31	51	84	24	17	15
½ TIME or more						
No. of reports	(40)	(38)	(39)	(18)	(20)	(23)
Faculty members	372	303	612	24	23	47
Mean	9.3	7.9	15.6	1.3	1.1	2.0
RANGE—low	0	0	0	0	0	0
—high	55	40	88	15	13	7

In the clinical departments from a similar number of reports as given above, 9 schools state they attempt to hold to a salary parity with the other schools of their university, but two frankly admit that they have been unsuccessful. Twenty-four reports state that they do not attempt to have a parity salary scale, that their salaries are higher, and that the difference ranges from an indefinite amount or

from 10% to 75% above that of the other schools. The balance of the reports are similar to those on the basic science departments in their comments.

Table 5 shows the number of faculty members of the three ranks in the two departments. In the full time faculties, there is close approximation between the two departmental groups in both total and mean numbers, although the range values show distinct differences. Data on the part time faculties are not as complete, but they show a very obvious difference in all the values between the clinical and the basic science departments.

Question No. 5, "Are full time men permitted to do private practice," received 56 replies. This subject is frankly controversial, has led to ill feeling between the full time faculty members, the volunteer members and other members of the profession. Dr. Rees considered this to be one of the primary problems of the study. The returns show that 18 schools permit private practice by their full time men with no indicated limitations for either the clinical or basic science departments. The right to private practice is, however, denied to members of both departments in 20 other schools. Two schools only permit this type of practice within their hospitals. The clinical faculty members are permitted private practice in seven, and only on referred cases in 8 other schools.

Answers to question No. 10 show that the right to private practice is limited by definite non-permission in 18; by limitation to referred cases only in 12; by contract or retention of fees in 5, and by an income ceiling in 3 schools.

Answers to question No. 9 are in effect the same as given in the two preceding paragraphs. Fees are retained by the faculty men in the 18 institutions permitting private practice. In the other schools not forbidding this type of practice, the fees may be retained until a certain income ceiling is reached when the excess fees go to the institution. Others require that all fees go to various institutional funds; or limit the rank of faculty members, or type of patient, with fees going to the man caring for the case. It is very evident that there are many ways of dealing with this problem among the medical schools of this country.

Question No. 11 deals with the rights of the basic science teachers with a degree in medicine to practice, or they and those with other degrees to do any outside work. There is again comment from all schools reporting and fairly close agreement with the privileges accorded to clinicians. Among the 57 reports, 24 schools state "no" without exceptions to these privileges. Twelve grant unlimited privileges, but a few intimate they are liberal because of the war time conditions. In 10 schools, the privileges are limited to consultations; in another 7 to laboratory procedures, book royalties and fees from lectures, court trials and examining boards. In 4 an income ceiling, contract and school tradition provide other limitations.

"Are full time men permitted to do consultation work," question No. 6 had reports from 56. Thirty-seven grant this privilege to their faculty members. In 8 schools this right is denied. The remaining schools, 11 in number, have

varying limitations to full privileges as, the clinical departments only; in the University hospitals only.

With consultations, more than one-half (30) of the schools reporting (56) allow the faculty members to retain the fees. Five limit consultations by an income ceiling with the excess fees going to the general, research or departmental funds. A few schools state that they require a certain per cent of the fees collected be paid to the institution for maintenance costs. In 8 the privilege is denied, while varying dispositions are made in the remaining schools.

Question No. 7, "When do appointments become permanent," received 53 replies. Six state the appointment is permanent at once; 8 state they never are; 9 state that the appointment is permanent after varying periods of time, from 1 to 5 years. Six schools have no rules and the tenure is indefinite. Nearly one-half gave reports showing wide variations for time and other conditions, and for the different ranks of both clinical and basic science departments. Question No. 17, "Do you have an established time limit that a man must remain in a given rank before he is eligible for promotion," can be considered at this point as it is related to the preceding question. No time limit is stated on 42 of the 56 reports submitted. The remaining 14 reports show that one school is working on a plan, 8 schools require from 2 to 3 years, and 5 from 1 to 7 years, depending on rank.

Allied with the two previous questions is No. 8, "Is non-salaried faculty appointed annually." A majority of the 57 replies received, or 34, state "yes" to

TABLE 6.

Indicate by numbers (1 to 8) the relative importance of the following in making appointments or promotions: (Weighted value)

a. Teaching effectiveness	1	(255)
b. Knowledge of subject	2	(241)
c. Contribution through research and publication	3	(216)
d. Rate of professional growth (current)	5	(123)
e. Recognition (national) by others in his profession	6	(120)
f. General knowledge and range of interest	7	(99)
g. Ability to cooperate with other members of department and school	4	(142)
h. Value to community or state	8	(64)

this question. In 14 other schools, the appointment is indefinite to permanent, while in one school, they are made biennially. Four schools follow the same rules they have for the salaried faculty members. The remaining 4 replies state no policy exists, or that there is a variation for the different ranks.

Question No. 18 also has a definite interrelationship with the last few preceding ones, and the data from 35 completed replies are shown in Table 6. Five schools report they cannot answer, another 5 that they have no policy, and the balance of the replies could not be weighed with the above. It appears that high qualifications within the field in which the applicants have been trained are most important.

The problem of retirement assistance for the faculty members is considered in questions No. 14 and No. 15. Forty-nine report they make provisions for

such assistance and one has plans in development. Of the rest, one offers life insurance, while 5 have no plans. Only one report states that their plan is compulsory for its full time faculty members. Seventeen reports state that the Teachers Insurance and Annuity Association plan is used with the faculty member and the school, each contributing 5% of the salary toward the premium, with no limit given other than the full salary. Another school assumes the entire premium of 10% of the salary up to a $500.00 maximum. Ten universities have their own annuity and insurance plan, while 8 other schools use state and city retirement plans with the premium divided between the individual and the institution. Salary deductions range between 3.5% and 6%.

One of the most interesting parts of this study has been the numerous comments attached to a definite majority of the reports either given after the various questions, or on the last page, or in several instances in quite lengthy letters. The latter were quite illuminating as the views given expressed the opinions of the writers on many problems and often gave their ways of meeting them. But to cover all the comments is impossible at this time as they alone are quite comprehensive in scope.

Also the questions which were raised indicated the amount of thought which has been given to this phase of medical economics by medical educators and administrators. All we planned to do in this study was to compile the data which came from the questionnaire in the hope that certain leads might open up to stimulate continued interest, and, in turn, to possible solution of some of these perplexing problems.

What the Educator Thinks the Ideal Medical Curriculum Should Be*

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INTRODUCTION

"Everybody says that the curriculum must be revised but nobody seems to be anxious to fire the first gun, so, here is your chance." Thus the secretary of this Association ended his commission to the authors of this paper. Certainly this is more than a two man undertaking; however, we are making bold (1) to set forth a series of fundamental criticisms of the medical curriculum; (2) to outline certain factors involved in curriculum construction; and (3) to recommend a procedure to develop a medical curriculum on the basis of cooperative educational experimentation.

It is true that there is general dissatisfaction expressed with regard to both the organization and the subject matter of the medical curriculum and also teaching in medical schools. We made a digest of 196 articles which have appeared on this subject during the past two decades. This digest covers 46 single spaced typewritten pages. The digest was then reduced to 130 points or statements.[5] An attempt was next made to roughly group these statementts under six larger categories, as follows, recognizing at the same time the possibility of classification under other categories: (1) Concern for, and study of, the curriculum, in order to remedy its deficiencies and improve it as a whole; (2) unification of all parts of the premedical and medical curriculum into a unified whole to accomplish the major aim and contributing objectives, laid down as guide posts; (3) adequate but not too specialized considerations of the parts of the curriculum which make up the whole; (4) attention to the student as a responsible self learner with the instructor as a guide and director of learning so that the abilities of the student will be developed to the optimum to make him a successful medical practitioner and person; (5) consideration of the patient as personality in a general and particularized environment,—physical, biological, social, and psychological,—to the end that the student doctor may get a complete insight into all factors of health and disease; (6) aspects of the qualifications of instructors, and the methods and procedures used in their functions of instruction.

Two English reports, one by the Interdepartmental Committee on Medical Schools, of which Sir William Goodenough[1] was chairman, and the other on medical education by the Planning Committee of the Royal College of Physicians[2] recently voiced criticisms at many points quite like those from leaders in this country. Lately a discussion of the curriculum of the United States Naval Academy by Hanson W. Baldwin, *New York Times*, October 12, 1945,

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* Read at the Fifty-sixth Annual Meeting of the Association of American Medical Colleges, held in Pittsburgh, Pennsylvania, October 29-31, 1945.

has a familiar ring. He states that "the four year course is already crowded and overcrowded and yet new technological developments that cannot be ignored are constantly occurring;" that "the midshipman complains that far too much is 'thrown at him' and that his instructors are simply 'referees' between him and the book;" that the curriculum "does not fully stimulate the midshipman to reason and to analyze;" and that "there is not sufficient time available even to read newspapers and be informed with reference to world affairs." Change a few terms in Mr. Baldwin's indictment and we shall be sure he is referring to medical education.

I. SOME CRITICISMS OF PRESENT CURRICULUM

It is natural, we believe, that there should be dissatisfaction with the medical curriculum, because it is largely grown by accretion, is the product mainly of opinion and judgment, not exact educational experimentation, and has become tradition bound with no one apparently willing to break away from it completely enough to meet current requirements. In consequence, certain recognized educational principles and requirements are violated. Here are some of them:

(1) LITTLE PROVISION FOR INDIVIDUAL DIFFERENCES.—It can hardly be questioned that one of the greatest discoveries for education of our older generation is that of individual differences. Many curricula in general education have been organized to provide as far as possible for such differences. However, except for a minimum of electives the medical curriculum is still lock step both as to curriculum and as to the time required for completion of the course, a veritable ball and chain to the development of individual initiative. Those who fall short under this rigid system are marked unfit and eliminated. This emphasis can be perpetuated obviously because there is a multiplicity of students applying for medicine. Under this practice we tend to select for admission or retention in school the more dominantly intellectual, non-emotional type which, if perpetuated indefinitely, will standardize the medical profession as to type, perhaps to a surprising extent in the future, not unlike the product of the assembly line. The extrovert, if he is bright enough, has a much better chance of survival in medical school than the introvert of equal brightness. The latter is more susceptible to fears, worry, and the severities of the present lock step system which too often involves the "take it or leave it" approach.

(2) SHORT COURSES.—When the addition of new instructional material has seemed advisable, this has too often been accomplished by the addition of a short course, rather than by a fundamental reorganization of segments of the curriculum to include the new materials. Provision of "educational nibbles" in the form of short courses is wasteful of educational effort. They should become units soundly organized into longer courses, given, if advisable, by more than one individual, each responsible for his unit fitted into a coherent pattern of educational material.

(3) UNWARRANTED DISCRETE UNITS OF INSTRUCTION.—Maximum continuity in education is advisable. The break between premedical and medical education should be reduced to a minimum, and the break between preclinical

and clinical, too often emphasized both in terminology and practice, cannot be defended on educational grounds. Students should be led to feel, both as to individual courses and groups of courses, that no part of their educational experience is independent of what is to follow, that no day's assignment, when completed, can be left behind for the next one presumably more important. Both in speech and in practice, coherence, continuity and interdependence of all units of instruction are highly desirable. Ways must be found to integrate the premedical with the medical to a greater extent, and the medical sciences with clinical subjects. The expression "preclinical" could well be abandoned because it carries the wrong connotation which many students catch and then say to themselves, "Thank goodness, this preclinical morsel has been disposed of. Now we shall get on to medicine in the clinic and hospital." There is also another serious gap to bridge,—between undergraduate and graduate medical education.

(4) TOO DETAILED.—Wherever a great body of knowledge, accumulated across the centuries, is to become a part of the social heredity of the new generation, it is not an easy task to give proper perspective to principles, and the associated scientific method, as against related details. It is equally difficult for a medical scientist to keep his eye single to teaching his subject in strict relation to requirements of medical practice, as against the requirements of specialization in his science. He is afraid to pass up details, fearing that his students may later be found deficient in subject matter. With only so much time allowed for the acquisition of ever increasing details, the student takes to memorization as basic in his study methods, for there really is not time to think and analyze, to marshal principles in their meaningful relations and make deductions or proceed inductively. He hardly has time even to pick out the principles for memorizing. Thus study and learning become a deadening sort of thing with reduction of enthusiasm and zest for medical study. To meet this situation, spoon feeding comes into play, and the students, who are not by nature good at memorizing, become the prey of fears so devastating to good scholarship. The educational climate thereby becomes unfavorable, whereas learning is done at its best when it is agreeable and pleasant.

(5) TEACHING BY DEPARTMENTS.—The current medical curriculum encourages, and almost requires, teaching by departments, rather than by subjects which cut across departmental lines. Hence, departments become increasingly autonomous and their representatives unwilling to participate in efforts to integrate instruction, which is so essential to most effective and permanent learning.

(6) COURSE PLACEMENT IN THE CURRICULUM.—Like the courses themselves, their placement in the curriculum is still basically empirical, the product of tradition, although course placement is so important that it should be subjected to the exactest possible experimentation.

(7) IS THE CURRICULUM MODERN?—In the current curriculum, have preventive medicine, positive health and health teaching, economics and sociological and psychological factors found a rightful place?

(8) IS IT TOO VOCATIONAL?—Finally, is our medical curriculum too voca-

tional and professional? What are the dangers of segregating the medical student, by reason of subject matter requirements, and the consumption of time required for their mastery, from the factors of general education, including the fine arts, and life today viewed broadly, during the four years of his course in medicine, and to a considerable extent during the years of internship and hospital residency?

Thus, we have attempted to show some of the deficiencies of the medical curriculum which explain, in part at least, the general dissatisfaction regarding it: that it fosters lock step education with few provisions for individual differences; that it is burdened with short courses which should be incorporated in appropriate longer courses; that it does not properly articulate premedical and medical, preclinical and clinical work, and undergraduate and graduate study, and suffers throughout from inadequate integration; that too many details are provided for through too many hours of instruction; that it fosters teaching by departments rather than by subjects in the broad sense; that course placement in the curriculum is not exactly enough determined; that, perhaps, it is not modern, is ill related to the demands of today and tomorrow; and that it may be overvocational and professionalized.

It is a truism in education that the poorer the curriculum organization and subject matter, the greater the demand it makes on teaching ability. Since hardly any institution has enough good teachers, it follows that it is highly important to improve instruction as far as possible by improving the curriculum. We can hardly afford to do less. Medicine is such a human subject touching life intimately, that it should challenge the curriculum makers to evolve the best of all curricula.

II. FACTORS IN CURRICULUM CONSTRUCTION

The first questions to raise in planning a medical curriculum are: (1) For whom is it designed, for those who have had two, three, or four years in general education of college grade? (2) What general aims and what specific objectives or goals is it to serve, that is, what sort of a physician as end product is expected? (3) By what means of evaluation or appraisal are we to know when the aims and the objectives adopted have been realized? (4) What time will be allocated for the curriculum, four calendar years, more or less? (5) What postgraduate or graduate work will follow, and for what percentage of graduates? (6) What factors favorable to learning should be kept in mind in the selection and distribution of subject matter through the curriculum? (7) How are the functions of examinations to be related effectively to the curriculum? (8) What is the relation of teaching methods to the curriculum? (9) On the negative side, how are such criticisms as the eight brought against the present curriculum in Part I of this paper, and others, to be avoided, or minimized, in the ideal curriculum? (10) What general philosophy is to apply? Is instruction to serve the whole student, for example, or is it frankly to serve intellectualism alone? Each of the ten foregoing items merits some further consideration:

(1) WHAT PREPARATION FOR MEDICAL STUDY?—With few exceptions, medical schools now require three or more years of preliminary college work before

admission. The national trend, to regard general education as closing with about the first two years of college may, in time, affect the point at which a student should transfer from college to the medical school. If a real educational break is to come at the end of the second college year, whether marked by the twelfth or fourteenth year of schooling, rather than the student take an additional year with another break, it might be argued, with point, that the student should transfer to medical school at the end of his general education, expecting the medical school to carry him for five years at least, and some would favor six years. If, then, in the first year of the medical school, certain subjects now regarded as premedical were incorporated and given more specific direction towards medicine in some subjects, physics, for example, the transition from the liberal arts college to the medical school would be easier, and would permit a much more exact appraisal of the student's personality and abilities during his first or transition year in the medical school than is possible under the present system. Regardless of whether this procedure wins favor, there are good reasons to justify it from a strictly educational point of view. If we are to take students after the junior year in college, or the senior year, the medical curriculum should be articulated properly to the preceding educational experience in each case. Many students now take courses in college which are repeated in whole or in part in medical school, probably to more disadvantage than advantage. Time is too precious to waste it in this kind of misplaced effort.

Dr. Henry G. Sigerist[3] has made out an interesting case for a six year medical curriculum based on two years of college. Those who are not familiar with it are referred to his program for a new medical school.

(2) GENERAL AIMS AND SPECIFIC OBJECTIVES OF THE COURSE.—Some may contend that it is enough to say that the general aim of the medical curriculum is to produce a modern physician and let it go at that. But should not each faculty take time enough to analyze the characteristics and qualifications of this modern physician? What knowledge and skill, what traits of personality, what social competence, what mastery of his native language, what appreciation of the fine arts, what understanding of social, economic, and other current problems, and what sense of responsibility as a citizen, is the budding physician to possess? These and other more detailed issues should be set forth, it seems to us, in a comprehensive set of general and specific aims and objectives. These will vary with the philosophies and the interests of the several schools. It will be somewhat futile for them to be the same. Some institutions, for example, may expect more research competence to result during the undergraduate course than others, and accordingly select incoming students and direct them to that end, but it seems to us that the student should look into the catalog of his school and find there what kind of physician the faculty and the facilities of the institution are cooperating to help him become, under the best possible circumstances.

(3) EVALUATION OF CURRICULUM AIMS AND OBJECTIVES.—Adequate procedures for the evaluation of the general aims and many objectives of the curriculum, to determine more accurately whether these have been realized in the

student, step by step, are probably the most neglected aspects of the educational process. We have long depended on individual judgment of an authoritarian nature, often unfavorably biased or partial, although tests, examinations, quizzes, recitations and actual performance have had a share of attention. However, subjective judgment is not enough when science demands unbiased evaluation. We have great need for more objective, reliable and valid measurement of educational outcomes and methods. Although there has been some activity towards this goal in recent years, a satisfactory state of affairs has not yet been reached. But it is clear that improvement in educational measurement must come if we are to be able to evaluate, and appraise validly, progress in the development of curricula and their best use. We must not forget that attempts to improve measurements directs impelling attention to objectives and plans, and eventually help to make these more clear and distinct. With improved means of appraisal we can increasingly expect better courses, better teaching, better student performance, and a better end product.

(4) TIME ALLOCATED TO THE CURRICULUM.—Whether the curriculum should cover four or more years, it is fairly safe to say that the details of the present curriculum must be reduced or the course lengthened, and even if lengthened, we would advocate a reduction in details, a considerable increase in well organized electives, a longer school year, say, by six to twelve weeks, affording an optional summer quarter to some students at the close of the sophomore and junior years. Reasons for this suggestion and for giving students the option of proceeding through school at several different rates, some to do more research, should be left to further investigation.

(5) WHAT EDUCATION TO FOLLOW GRADUATION.—The recent British reports have emphasized that the solution of some of their problems of the undergraduate course can be found in clear differentiation between undergraduate, postgraduate, and graduate education, restricting the undergraduate curriculum to nonspecialized subjects, leaving them to later study. By that much the undergraduate course can be freed of certain curriculum materials. It is imagined, however, that there will not be general agreement as to what can safely be left to the student's hospital experience unless that experience, as the British plan it, is to be put on a more definite and assured educational basis. That does not for us mean formal education; it does mean a planned, general curriculum, so to speak, for the hospital house staff, with educational experiences amply planned and effectively carried out. Such a procedure will call for considerable change in some hospitals.

(6) RELATION OF FACTORS FAVORABLE TO LEARNING AND THE CURRICULUM.—Certain factors favorable to learning must be kept in mind in the selection and distribution of subject matter through the curriculum. One example, from many available, will illustrate the point. To what extent should a course, say, pathology, be concentrated into one semester, or extended over an academic year, to say nothing of its planned integration with many other subjects of the curriculum? Experimental education has clearly shown the advantage of distributing learning

opportunities over a given period, determined as optimal for the subject. Generally speaking, learning would be favored by not compressing pathology into a single semester but by extending it at least over a year, maybe a longer period. The reasons for this conclusion are both biological and psychological, and are well set forth in many experimental studies of learning. Teaching which calls for mere memorization without immediate application or experience has been shown to be of little value. This implies that any series of pure theory courses, without constant correlation with practice, are poor substitutes for an integrated curriculum, tying up theory with practice all along the line. In addition to the already established factors favorable to learning, it is highly probable that others can also be derived by extending the frontiers of experimental studies in medicine.

(7) EXAMINATIONS AND THE CURRICULUM.—Although examinations strictly speaking are not a part of the curriculum *per se*, yet they have an important relation to it. What, after all, are the functions of examinations? Are they merely to test knowledge and its application, or are they essential to the educational process? They give opportunity for one of the most important of educational experiences. On the one hand, preparation for them gives the student an opportunity to view subject matter as a whole, to marshal it in usable organization, to make it readily available for use in a variety of ways, perhaps the most important of which is problem solving; on the other hand, it gives the instructor an opportunity to evaluate his performance during the course and the validity of his illustrative materials, laboratory exercises, and choice and use of clinical cases. What an individual does in preparation for examinations is quite what he is likely to do through life in preparation for a conference, for a lecture, for a case in court, for a consultation, and many other undertakings. Life for many of us is one examination-like preparation after the other, and we thank school days for experience. Examinations really should be welcomed and not regarded as "doomsday" performances. Unfortunately, they are often poorly set, poorly timed, and because performance on them is likewise poor, the ultimate expedient may be to tinker with the curriculum in the hope of getting better examination results. Is there wisdom in suggesting that examinations not immediately follow the closing of any year long course, but follow after a period of ten days or two weeks, freeing the student for additional reading in the field, as a supplement to reviews, and other typical preparation for the examination? Further, has a student, in instances, any right to be consulted as to the date of his examination, measured by his own self-judged preparation for it?

(8) RELATION OF TEACHING METHODS AND THE CURRICULUM.—The curriculum, for the most part, conditions teaching methods. If the curriculum overemphasizes memorization, teaching methods take that direction also. If the curriculum is largely traditional, teaching follows the same pattern. Conversely, if teachers insist on adopting new procedures, these may influence curriculum revision, as has been noted in the efforts to effect better integration, through emphasizing larger units of instructional material, such as teaching diseases of the chest from the standpoint of medicine, surgery, pathology, anatomy, bacteriology, et cetera, rather than teaching them by departments independently.

(9) HOW AVOID CURRENT CRITICISM OF THE CURRICULUM?—It is easy to criticize, which is generally futile unless constructive. How are the criticisms set forth in the first part of this paper, and others which could be brought forward, to be minimized or avoided altogether? There is a remedy for each of the eight criticisms previously mentioned and for others. In instances, this will be found, in part at least, by the application of one or more of the principles set forth in the second part of this paper. But the ultimate remedy in many respects must await further scientifically controlled educational experimentation; that admittedly is a slow process but no slower than any other carefully controlled investigative work. Such a procedure will likely lead to these results, as in other fields of education: individualized plans of instruction; comprehensive courses extending over much longer periods of time; the unit plan of curriculum and course organization with each unit definitely related to larger units and thence to the total curriculum; the avoidance of too long periods of time spent on relatively unimportant details; reduction in unnecessary duplication with stress on a more balanced emphasis of the details of instruction, including assurance that no important items will be omitted; new syntheses of courses cutting across present departmentalized and detailed research courses; every course related to its utilization in practice in time, as well as content; elimination of the obsolete, and replacement by more modern materials; emphasis on the student as a member of society as well as a professional expert, and so on.

(10) EDUCATIONAL PHILOSOPHY AND THE CURRICULUM.—The educational philosophy which the faculty adopts in setting up its curriculum will naturally come out in connection with the general aims, objectives, or goals adopted for it. However, a broad, more general educational philosophy may be applied. That may become an important issue. Should the student as a total personality, or merely his intellectual interests, be the concern of the curriculum makers and school administrators? The latter simplifies the issues but for some educationists it does not meet all requirements of the educational process. Intellectualism can be considered at its best while still recognizing the demands of the "whole" student, his interests, his emotions, his drives, his diversions, and his relation to the community and to world affairs, et cetera. It is not necessary to pursue this emphasis further; it is clear that if the development of the student's total personality, and that includes character, is the responsibility of the medical school and also the teaching hospital, the curriculum, the school environment, and the administrative arrangements of the institution have definite relation to making this aspect of educational philosophy work.

III. COOPERATIVE EDUCATIONAL RESEARCH AND THE IDEAL CURRICULUM

There are already worthwhile medical curricula, some more challenging and interesting than others: the course suggested by Sigerist[3], another by Zapffe[4] as long ago as 1927, and others in current medical school catalogs. Notwithstanding, our study shows wholesome dissatisfaction with the general curriculum situation. Any curriculum which we might present would contribute little more, unless it is the outgrowth of sound experimentation based on selected investigative techniques which are available, and which should be developed further. The

ideal curriculum, it is our deep conviction, will, therefore, come out of acceptable, controlled, scientific educational research, conducted preferably on a well organized cooperative basis. Because of prevailing discontent, we are convinced that this is preeminently the time to suggest launching this effort.

In the preparation of this paper, we considered outlining a number of the elements of curriculum research but the complications are too many for the time allowed. It can only be said, in consequence, that the work should proceed much like any other research, by analyzing all of the discernible elements involved, such as the problems set forth in Part I of this paper; and then press on, with the guidance of such factors as those set forth in Part II, employing throughout the best research techniques available.

Who is to do this research? It seemed to us that the Association of American Medical Colleges might find in it a great opportunity. Financing might be provided through contributions from member institutions, and from one or more foundations. Conceivably the details of the work might be carried out in a variety of ways,—a strong committee set up by the Association with a technical director, paralleled by a similar committee within selected medical schools, which might volunteer to cooperate in a program of activities set forth by the committee of the Association, and later worked over at a meeting of this committee with the committees of the cooperating schools. It might be found advisable for one school to undertake one phase of the work, other schools different phases, and in several parallel phases to provide for close checking of results. All results, of course, would ultimately be checked by different institutions using the same procedures.

It is hardly to be expected that many schools would volunteer to undertake curriculum revision experimentally. It might be found to depend principally on the interest of a few men in a given school, this interest spreading from them to others. Single phases of the project could be undertaken if only a limited number of faculty members agree to the program. At best, such an undertaking would require five years to make a showing. After that it is predicted that some schools would never give up this method of keeping the curriculum up to date. It should be frankly understood that curricula are never completed; they are always in the process of development to that end.

We so strongly believe that research on curriculum content and organization is just as important as research on any one of the many unsolved aspects of medicine, that we can only believe that lasting good will result to medical education if this Association will assume aggressive, expert leadership in its behalf. This should not be taken to mean that some good work has not already been done. However, isolated instances of this sort fail of appreciation and use. The consequent immediate need seems to be an adequately organized approach which an agency like this Association could so effectively give. At any rate we have attempted to show some of the problems of the medical curriculum, some of the related factors, and have ventured to propose a program likely to solve many of these problems in the shortest possible time with the greatest chance of general approval and acceptance.

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3. Sigerist, Henry E.: Trends in Medical Education, A Program for a New Medical School, *Bull. History Med.*, 9; 177-198, (Feb.) 1941.

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5. Summary and Interpretation of the Statements Made in 196 Articles by the Doctors, Instructors, and Administrators Who Contributed the Articles, with the Frequency of Mention, Stated in Terms of Needs in Medical Education.

We need:	Frequency
1. More curriculum study	1
2. More unified effort on the curriculum	2
3. More of the spirit of cooperation in all effort	1
4. Frequent revision of the philosophy underlying the curriculum	7
5. To consider the formal medical course as merely an introduction to the study of medicine	3
6. Emphasis upon experimentation in premedical and medical teaching	3
7. More research in medical education	2
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8. Constant attention to the major aim (coordination, correlation, integration)	33
9. The separate curriculum strands running through the total curriculum	11
10. Constant attention to applications in all courses	9
11. Early and continued contact with clinical aspects	9
12. Less piecemeal instruction by specialists	10
13. More emphasis upon organized knowledge as a whole	5
14. More use of comprehensive units than of fragmentary details	8
15. Elimination of "crazy-quilt" curriculums	2
16. The clinical point of view in all courses	4
17. Less crowded curriculum—fewer courses	2
18. A smaller number of departments—less academic departmentalization	5
19. To guard against too early over-specialization	7
20. More emphasis upon the cultural and liberal aspects of all courses	7
21. More emphasis upon public health as a major aim	3
22. Association of medical and health problems with a social philosophy	13
23. More emphasis upon normal health—its conditions and symptoms	8
24. More attention to, and interest in, public and community health	13
25. More emphasis upon principles contrasted with encyclopedic knowledge	7
26. More emphasis upon environmental sanitation and immunization	1
27. More emphasis upon the development of a disciplined mind and body	1
28. More emphasis upon action as an end result of learning	1
29. More emphasis upon the true spirit of learning	1
• • • • • • • • • •	
30. More stress on humanities	3
31. Less requirement in foreign languages	1
32. More training in logical diagnosis in health and disease	2
33. Less dependence upon prerequisites	2
34. Less emphasis upon dissection	2
35. More attention to diseases of the oral cavity	2
36. More emphasis upon industrial medicine	2
37. Adoption of a less highly technical vocabulary	1
38. More emphasis upon teaching interns, house officers, and residents	1
39. More emphasis upon intelligent prescription writing	1
40. Emphasis upon the emergency aspects of medical practice	1
41. More stress on functional disturbances	1
42. More emphasis upon the doctor's responsibility to the patient	1
43. More emphasis upon all possible therapeutic devices including physical therapy	3
44. More emphasis upon dietary knowledge and practice	2
45. More unity between psychology and psychiatry	2
46. More emphasis upon biophysics	1
47. More attention to living anatomy	1
48. More clinical teaching in obstetrics	1
• • • • • • • • • •	
49. More careful selection of candidates	5
50. To weed out incompetents all the way along	1
51. More opportunity for student initiative and freedom	9
52. More time and encouragement for students to think, and live broadly	8
53. More stress on self-education	10
54. More opportunity for original investigations by students (projects)	5
55. More emphasis on student learning contrasted with instructing	7
56. More effort to learn students contrasted with teaching them	5
57. Less emphasis upon points and credits	3
58. More emphasis upon scholarly abilities	2
59. Earlier selection and preparation of promising prospective doctors	2
60. Emphasis upon the quality rather than the quantity of students	2
61. Fewer required hours	1
62. Better student understanding and insight	11
63. Credits only at the end of the period of preparation	1
64. Premedical and medical courses to meet student needs	7
65. More emphasis upon common sense	1
66. Emphasis upon the scientific method and manner of thought	6

We need:	Frequency
67. Less emphasis upon evaluation in terms of time spent	2
68. More stress on learning by the problem plan of attack	8
69. Less emphasis upon standardized medical education	8
70. Emphasis upon inculcation of a desire to learn continually	1
71. More emphasis upon teaching a methodology	6
72. More emphasis upon independent reading	2
73. To treat students as friends	1
74. Emphasis upon the teacher as a guide	2
75. Emphasis upon the development of desirable personality characteristics and ethical practices	5
76. Emphasis upon student health and periodical health examinations	2
77. Less stress on mere memorization	9
• • • • • • • • • • •	
78. More unification around the study of man and his environment	6
79. More emphasis upon the pathological as a departure from the normal	4
80. More emphasis upon objectives and consequent procedures at all stages	8
81. More emphasis upon the interrelations of the nervous system in all courses	3
82. More emphasis upon disease prevention as a central objective	15
83. More insight into the social and psychological aspects of life	6
84. More emphasis upon purposive learning	1
85. More extramural instruction—out-call service	6
86. Internships for educational values only	3
87. More emphasis upon functional knowledge	3
88. More emphasis upon the wholeness of the psychological and constitutional or physical—the "biopsyche"	11
89. More unification of the premedical and medical curriculums	7
90. More and better general education	3
91. Emphasis upon the patient as well as the disease	4
92. Emphasis upon structure and function in health and disease	1
93. More emphasis upon disease, inheritance, and eugenics	7
94. More emphasis upon thorough case histories	2
95. More attention to the art of medicine	1
96. Less dependence upon authority	1
97. Better and more purposeful instruction on lower school levels	2
98. Premedical education in the professional school	1
99. Student awareness of all the specialties	1
100. More cooperative association with public health agencies	2
• • • • • • • • • •	
101. More directed teaching	1
102. Early and more contact with the sick and suffering	4
103. Differentiation for undergraduates, specialists, postgraduates	1
104. To keep step with new knowledge in all fields	7
105. To eliminate the obsolete and irrelevant	5
106. More use of the cooperative plan to unify theory and practice	2
107. More careful and conscientious attention to patients	1
108. Less opportunity for charlatanism and quackery	1
109. More use of objective examinations	2
110. Less fettering by state enactments	2
111. More use of preliminary and final examinations	1
112. A larger supply of excellent teachers	3
113. More emphasis upon the teaching function of the doctor at the bedside and in the community	1
114. More use of note books and significant notes	1
115. More emphasis upon physical observation of patients	2
116. Less dependence upon essay examinations	3
117. Less student association with discharges and extracts of patients	1
118. Fewer long-winded lectures	2
119. Less emphasis upon refined laboratory technics	2
120. Better pedagogic teaching with adequate preparation in the psychology of learning	8
121. More pushing of able students	1
122. More exhibits of pictures and reading materials	1
123. Less emphasis upon mere repetition	1
124. More emphasis upon a well-rounded and adequate rotating internship	2
125. To utilize the natural spirit of curiosity in students	1
126. To emphasize student participation in clinical instruction	1
127. To be aware of personal problems of the entering medical student	1
128. To encourage and emphasize more intelligent use of the library	1
129. More ward learning	1
130. Aid to the sick poor	1

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Each of the listed statements has meanings independent of the others and may, wisely, receive thought and discussion of itself alone. However, in the list as given, there has been an attempt to roughly group them under larger categories: I. Concern for, and study of, the curriculum, in order to remedy its deficiencies and improve it as a whole; II. Unification of all parts of the premedical and medical curriculum into a unified whole to accomplish the major aim and contributing objectives, laid down as guide posts; III. Adequate but not too specialized considerations of the parts of the curriculum which make up the whole; IV. Attention to the student as a responsible self-learner with the instructor as a guide and director of learning so that the abilities of the student will be developed to the optimum to make him a successful medical practitioner and person; V. Consideration of the patient as a total personality in a general and particularized environment—physical, biological, social, and psychological—to the end that the student doctor may get a complete insight into all factors of health and disease; VI. Aspects of the qualifications of instructors, and the methods and procedures used in their functions of instruction.

Tradition — The Rivet in the Curriculum*

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Early in the present century, James Branch Cabell wrote a book called, "The Rivet in Grandfather's Neck." Among the chief characters were a group of china dolls, one of whom—the Grandfather doll—had fallen from his place on the mantel and sustained a compound comminuted fracture of the neck. In treating this injury, the local doll surgeon had anticipated our modern orthopedists by a quarter of a century or more and, scorning splints, had used a rivet. Unfortunately, and perhaps because of that zeal which so often leads the pioneer scientist into errors of judgment, he had somehow allowed the face to point posteriorly when he had driven into place his forerunner of the Smith-Peterson nail. Therefore, poor Grandfather, when restored to the company of his fellow dolls on the mantel, was unable to look out into the room, but gazed only backward at the wall. The implication of the book, which dealt with Virginians in the period after the Civil War, was that tradition, leading to excessive concern with life as it had been in the good old days, was playing the role of such a rivet in the case of the people of Virginia, and was preventing them from reassuming their previous position of leadership in national affairs.

We all agree that a certain reverence for tradition is just as desirable in the field of medical teaching as in other spheres of human activity. Vines and mosses, when growing on the walls of our buildings, lend them beauty and induce respect. However, it is, perhaps, wise to consider whether such vines and mosses do not from time to time invade the walls of our cranial cavities and by causing pressure atrophy bring the usual consequences of such lesions, namely forgetfulness of recent events, impairment of judgment concerning the future, and excessive reverence for the customs of the remote past.

In our capacities as scientists, we all accept the validity of the experimental method as the surest means of attaining knowledge. In our capacities as administrators we often either reject this principle entirely or utilize it in Lilliputian degree. The variations which exist in different schools or in the same school over a ten year period in such matters as the organization of departments, the relative allocation of budgets, the delineation of the curriculum, and the methods of selection of students are so slight as to suggest that we believe Utopia has been achieved and improvement is not possible. Actually, none of us believe this and most of us realize that much can and should be done to improve our teaching, if it is to keep pace with the advances in our sciences. The reason such changes are not made is not, therefore, to be ascribed to smug satisfaction with existing conditions, but rather to inertia and, perhaps, more particularly, to excessive

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specialization in the intellectual interests of our teachers and to what may, perhaps, be not improperly called vested departmental interests. These hindrances to change seem to me so important that I would like to discuss them in some detail.

Deans of medical schools may be compared to managers of baseball teams, in that both have the responsibility for integrating the labors of a group of individuals —some of whom are likely to be prima donnas—in order to achieve smooth teamwork. However, there is one important difference. The baseball manager has to achieve results or he will soon find himself in a lower league, while the dean is usually under no such compulsion. Hence, they go about their work in different manners. The manager devotes his primary interest to succeeding in his job of building a winning team and is only secondarily concerned with his important function of keeping the individual players in a contented frame of mind. To him the job—which is to say the team—comes first, and the interests of the individuals, while important, are secondary. In searching for new material, he realizes that there are two positions—pitcher and catcher—which require specialists, but that the other places require men who are trained in the fundamentals of hitting and fielding rather than the finer details of any particular position. Hence, his search is, with the exceptions mentioned, not for specialists but for ball players. He does not hesitate to ask his star right fielder to plug the weak spot at first base, or to bring in as shortstop a man who has always played third base.

In medical schools these matters are usually handled quite differently. Despite the fact that there are only a few major positions which absolutely require especial technical skill, the tendency is to regard our teachers as specialists and to look with horror on any tendency to alter such labels. Let us assume, for example, that the position of professor in department X is vacant and that for one reason or another no first rate person who happens to be working in the department X is available. Under such circumstances the usual procedure is to appoint some one who bears the label "X" and to say subconsciously, "God made him—let him pass for a man." And this, despite the fact that there might happen to be a half dozen men working in departments of Y, Z, A or B who are first-rate and who would do a better job—both in teaching and in research—than the less able individual who happens to bear the desired label.

The example could be multiplied many times and should be contrasted with the rarer instances in which the reverse has happened in that the institution, searching for a man rather than a label, has brought an individual of outstanding ability from Department Y to be the chief in Department X. I know of no instance in which this procedure has failed to yield happy results provided the man chosen has been an individual of unusual competence. The classical example is Osler, and there are a few recent happy instances.

In our concern with buildings, equipment, policies and other important matters we tend at times to neglect problems which should be continuously in the forefront of our consciousness. We sometimes forget that—with the exception

of the germ plasm of superior people—the academic dollar is probably the most valuable material thing which society possesses because it is a currency which purchases and, hence, molds the future. To waste such precious coin is to inflict unpardonable injury on society. In our justifiable concern with the physical plant and our unjustifiable tendency to confuse "bigger" with "better" we often waste academic dollars by failing to remember what Emerson said: "The true test of civilization is, not the census, nor the size of the cities . . .,—but the kind of man the country turns out." Unless the expenditures for the physical plant are properly balanced by the expenditures necessary to secure the proper people, academic dollars will be wasted. To pay a mediocre associate professor $3,500 per year is a wastage of funds; to pay an excellent man $6,000 is a sound investment. Similarly, to spend five hundred dollars (or even five) per annum to make a third-rate student into a fourth-rate physician is wastage; to spend $2,500 yearly to convert a superior student into an excellent physician is an economy for society. We would all agree that an incompetent physician who for thirty-five years earns an average of $10,000 per year while practicing antiquated medicine has wasted or worse than wasted $350,000 which comes from the pockets of his patients. If, on the other hand, he is thoroughly able—which, of course, implies that he is deeply conscientious as well as intelligent and well trained—the funds which society pays him during his professional career are well spent, whether he earns more or less than his incompetent colleague. Considerations such as these, although obvious and trite, may serve to remind those of us who are responsible for the destinies of medical schools that "the indefatigable pursuit of an unattainable perfection" constitutes the chief excuse for our existence.

The traditional method of the selection of medical students consists, in the main, of a praiseworthy attempt to choose men of good character on the basis of scholarship and native intellectual ability. Perhaps we do not as yet know enough about psychologic testing to begin to emphasize emotional qualities, but experiments along these lines are needed. Physicians and medical students are, as a rule, men of high honor and fair intelligence. Unfortunately, many possess one quality which is, perhaps, more important in creating distrust and dissatisfaction on the part of the public than all of the economic problems which are presently so widely discussed. This quality is jealousy. To wash our hands of this realization by ascribing it to human nature and by pointing out that jealousy is also widespread among lawyers and ministers is to beg the question. Jealousy among them does not cause human beings to die. Since jealousy, which Dryden called "the jaundice of the soul," once acquired cannot be eradicated readily, the problem must eventually be met by picking as medical students, and—above all else—as faculty members, individuals whose emotional metabolic processes do not lead to the production of this spiritually corrosive substance. Unfortunately, psychologic research has not yet progressed to the point where such selection can be based on accurate knowledge. However, such an admission need not deter us from making the effort, for we should remember that:

"Our doubts are traitors,
and makes us lose the good we oft might win,
by fearing to attempt."

Excessive reverence for tradition and, hence, for the status quo is, in large measure, responsible for the creation and the survival of those "vested interests" which hamper change and which often make it impossible for medical schools to meet the obligation to society of optimal achievement in relation to the academic dollars invested by society. (Obviously, "optimal achievement" does not mean the greatest possible number of students or of publications; the term properly refers to "best," not "most"). These vested departmental interests include teaching hours, budgets and space, all of which are usually apportioned in a manner more closely related to the past than to the present or future importance of the subject. It would seem obvious that such apportionment should be related not only to the present importance of the subject but, more especially, to its probable future importance, the latter being conditioned by the rate at which the scientific frontiers are being extended. We are, perhaps, safe in assuming that with the exception of gross anatomy, which remains essentially stationary, every medical subject is increasing in actual importance. Why, then, do most schools still persist in devoting several hundred hours of the first year to dissection when almost everyone admits that the student cannot possibly remember more than a small fraction of what he learns at this time, and when it seems obvious that if a portion of the gross anatomy were relegated to the fourth year much more of the subject might be retained? The defense commonly offered for this tradition reminds one of Bassanio's description of Gratiano's arguments:

"His reasons are as two grains of wheat hid in two
bushels of chaff;
You shall seek all day ere you find them and when
you have them they are not worth the search."

Quite aside from anatomy, the role of progress in the different subjects is very variable and it would seem that those fields which deal with disease in relation to environment are progressing especially rapidly at present. Thus the recent advances in the treatment of infections and of nutritional disorders have made it desirable that preventive medicine receive a new orientation and additional emphasis. The student must be taught that he is neglecting his obligation to society if he treats a patient with hemolytic streptococcal infection or pellagra without inquiry as to whether other members of the family are similarly affected. When preventive medicine is taught in the abstract as hygiene or public health, it is difficult to elicit the student's interest; when it begins at the bedside as a problem involving his individual patient, the chances of interesting the student would seem more favorable.

When we turn from the physical to the psychological aspect of environment the need for change seems even more imperative. The war has made it abundantly

clear to any who doubted it before, that the sick soldier is in many instances simply an anxious and unhappy soldier who can be treated successfully only by the physician who is willing to doff for the moment his scientific raiment and don his priestly robe. It is, perhaps, not important whether we call this psychiatry or psychosomatic medicine, but it is important that we impress on our students the neglected truism that the good physician must necessarily be as much concerned with the happiness as with the health of his patients. It is unreasonable to expect that the psychiatric department alone can teach to the students this vital attitude of mind. Perhaps the function of the department is rather to teach it to the faculty so that every internist, surgeon, obstetrician, etc., practices it on his wards. Unless this is done, the next generation of doctors will very likely continue to give pink pills to women who have insomnia because of mother-in-law troubles, and to remove appendices from men whose abdominal pain comes from inability to get along with the boss. To take the point of view that only the physician with advanced training in psychiatry should be concerned with emotional problems is as unreasonable as to say that only a hematologist should look at a blood smear or only a cardiologist should listen to the heart.

Pediatrics, when viewed as that field concerned with the cure of the sick child, would seem to be declining in relative importance, but when looked on as the logical point of departure for preventive medicine its relative significance is constantly increasing.

General surgery is more than holding its own in rate of scientific progress, but one gains the impression that details of technique which are clearly a matter for graduate training are still being stressed with undergraduates, while the fundamentals of surgical physiology are often neglected. In view of the paramount importance of general surgery in the hospital, and in graduate teaching, it does not appear that this department is ordinarily assigned a larger proportion of the budget and space than is merited.

However, one may question whether the number of student hours devoted to it may not be somewhat excessive.

Internal medicine is in some respects the backbone of the clinical years and, in view of the advances being made, this will probably remain true in the future. However, both psychiatry (when looked upon as that field of medicine which is concerned with the happiness of human beings) and preventive medicine are increasing in relative importance more rapidly than is internal medicine.

Since the total amount of information to be acquired in medical school is steadily increasing, it might be well to increase the total number of teaching hours. Expansion of the academic year to 40, or even 42, weeks would afford, at least, a partial answer to this problem. Unless this is done, a reapportionment of the various subjects in relation to their importance in 1965, rather than 1925, would seem to be imperative. Obviously, such a rearrangement in the teaching hours could only be really effective if accompanied by parallel changes in the budget and in the space assigned to the several departments. One wonders how many

medical faculties would be willing to face this problem in an objective, unselfish spirit, and with a realization of Ibsen's wisdom when he wrote:

> "I hold that man is in the right who is most closely in league with the future."

The topic of the strangulating effect of excessive reverence for tradition on the development of medical teaching is so intriguing that one is tempted to continue to belabor the point. However, to do so would be to run the grave danger of proving to you the correctness of the definitions—at least, as applied to the speaker—that a professor is a person who talks in other men's sleep, and that a dean is an individual possessed of reverse genius, i. e., an infinite capacity for giving pains. Perhaps we can all agree that the most important thing, aside from the selection of the best possible men for faculty and student body, and for increasing emphasis on research, is for us to conduct well planned experiments not only in our laboratories but also experiments in organization, in administrative plan, in methods of teaching, in curricular content. Those experiments which prove successful will, in time, be adopted generally, those which are of dubious value will be discarded, but even so will serve to keep us aware of the necessity for change in any institution which is to function usefully in a changing world. The schools which are so smug as to scorn experimentation will eventually, like the Grandfather doll, be only able to look backward, and their faculties will come to resemble Kipling's old men:

> "And because we know we have breath in our mouths
> And think we have thoughts in our head,
> We shall assume that we are alive,
> Whereas, we are really dead."

DISCUSSION

DR. D. BAILEY CALVIN (University of Texas): May I briefly report on an experiment which was tried with our new entering freshman class early in September? The class was quite heterogeneous both from the standpoint of amount of training and length of time since the student had had any contact with actual college work. The training varied in extent from the approximately sixty-semester hours offered to Army Specialized Training students to degrees of training sufficient for the Ph.D. degree. The lapse of time since college contact varied from zero to as much as nine years. Our freshman faculty, therefore decided that it would be advisable to organize a three week Refresher and Orientation course to be given at the beginning of the freshman year. A date three weeks prior to the original matriculation date was set for the start of this course.

Thirty-nine clock hours were scheduled in each of the three week periods, divided approximately equally among the several departments and into comparatively equal blocks of lecture time, laboratory time and periods set aside for conferences and consultations, in groups and individually, with the members of the faculty.

We endeavored to review briefly for the benefit of the students the materials of greatest importance that they should have brought to medical studies from their premedical curriculum, and to show them why this material would be necessary as a foundation for the study of medicine. Both preclinical and clinical instructors were invited

to participate in the conferences and discussions. The response and cooperation obtained from both groups was excellent.

The general reaction from the freshman faculty to the whole program was rather satisfactory. We recognize, however, that the final evaluation of the results of this experiment can only be made as the work of the class progresses through the first year curriculum. There was one immediate point of criticism which deserves consideration. The individual conference time did not seem to be sufficiently long in some cases. This was counteracted in some degree by inviting students to ask for conferences at times other than those in the actual clock hour schedule. A considerable number of students took advantage of this request. The faculty feels that the conferences have resulted in a far better instructor-student relationship and understanding than has previously prevailed.

A few students felt that the time had not been well spent. Generally speaking, these students fell in the group represented in the upper third of the class as selected and among them were the younger students who had had a much shorter delay in time between completion of premedical work and matriculation in medical school. The older students and particularly those who had been out of school for some little while were unanimous in their expressions of satisfaction over the review and refresher period allowed them prior to beginning of the actual medical course schedule.

Another thing we are doing in this regard, in an effort to correlate or integrate our premedical and preclinical subjects is to visit with and become friends of the various deans in arts and science, and the premedical instructors in the schools in the State of Texas. We have found that we have been able to get a far better evaluation of the students recommended to us from the various colleges as a result of knowing personally and having sat around a table and talked with the various instructors who are sending transcripts and confidential reports to us.

The third thing that we are considering (and yesterday's program will make possible) is to extend our senior year to twelve months, and to organize for the additional three months, supervised externships in several hospitals in the state, under preceptors whom we can depend upon to give students satisfactory supervision and training.

I think the information and suggestions as presented in the paper just given are certainly challenging. We should give them serious thought in connection with post war reorganization and changes in our curriculum.

Embryology in the Medical Curriculum*

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This is a period of intensive planning for a remodeled curriculum. It is a time for appraisal of the present curricular structure and a time for modifying, discarding and adding. Among schools and within faculties there is fairly general agreement on the objectives of undergraduate medical education and common acceptance of the principle that the curriculum should be shaped to attain them. Conflicts of opinion exist with regard to many curricular details such as that with which the present discussion is concerned.

A half century ago some medical educators, among them Arthur Dean Bevan,[1] were beginning to appreciate the need for instruction in embryology. Even now, however, the subject is so lightly regarded in some schools that it is not included in their curriculum. My purpose is to show that embryology is a useful part of the undergraduate preparation and to urge that the subject be given the consideration which it merits.

In 1942, Place[2] submitted to all medical schools of the United States a questionnaire for data on the time devoted to the several phases of anatomy. The 63 replies form the basis of his tabulation of the hours allotted separately to gross anatomy, neuroanatomy, microscopic anatomy (histology) and embryology. The indications of the collective returns are valid, notwithstanding that shortcomings inherent in the questionnaire method are such that some individual entries may not be absolutely reliable.

Place's table was published without discussion. The following statements summarize his records pertaining to embryology. Of the 63 schools, 34 report an independent course in embryology. Thus scarcely more than one half the schools covered in the survey consider the subject important enough to justify its presentation as a separate course. The time allotted to it ranges from 20 to 128 hours; the mean, 79 hours, represents 11 per cent of the mean allotment for all branches of anatomy in these 34 institutions. Thirteen of the 63 schools state that instruction in embryology is combined with microscopic anatomy, leaving 16 which seemingly omit formal teaching of the subject. It may be warranted to assume that the 13 institutions which combine embryology with histology are devoting only scant attention to embryology.

Evidently there are those who believe that the default on the part of the medical school in not giving any embryology is corrected by requirement of a premedical course for admission. A college course in embryology is prerequisite

* Read at the Fifty-sixth Annual Meeting of the Association of American Medical Colleges, held in Pittsburgh, Pennsylvania, October 29-31, 1945.

for admission in 22 schools. Of the schools which exact this requirement, there is a 3:1 proportion between those which do not themselves teach embryology and those which do.

There are several principal factors which must be taken into account in analyzing the causes of the neglect of embryology.

1. An influence of major importance is progressive crowding of the curriculum. The curriculum makers, working within the traditional instruction time of about 33 months for the whole medical course, bring pressure to bear which will release time needed for newly introduced or expanded clinical subjects. The "preclinical" courses have had to yield, and anatomy in particular has been called on to shorten teaching hours. In many instances, embryology is wholly or partially crowded out, presumably because other phases of anatomy are considered to have more urgent claim on the assigned block of time. This is not the place to belabor the various issues which have been raised in the familiar discussions of anatomy and of anatomists and their ways. But there is one pertinent fact: The teaching philosophy of the department will determine the fate of embryology when the time assigned to anatomy is parcelled out to its several divisions. It is the duty of anatomists both to resist unreasonable curtailment of the time allotted to anatomy in the curriculum and to use judgment in apportioning their allotment among the divisions of the subject. For obvious reasons, no anatomist would dare to omit histology, to compensate for reduction in the total anatomy time. Embryology, however, does not fare so well. Many educators seem to be insufficiently embryology conscious and are consequently indifferent about inclusion or omission of the course. Some of those who are indifferent may have little notion of what the subject is or, perhaps better, what can be made of it in teaching. I know one critic who relies on vague recollection of his own long past college course, and wrongly concludes that there is no other kind of embryology.

2. It is possible that in some instances embryology has been tried and then dropped because the course had not proved to be of value. If that actually has happened, it was the result of ineffectual teaching; the subject itself was not at fault.

3. Still another factor is the impression that college embryology may well substitute for the teaching that can be offered in the medical school. One anatomist[3] makes this pointed statement of his position: "Medical students labor under too much pressure, particularly in the first two years, so that it would seem to be the part of wisdom to arrange for them to take embryology as a prerequisite before they enter the medical schools." An anatomist dean[4] writes, with a note of skepticism that will be shared by many: "As an anatomist, I am curious to know what the effect would be on the anatomies and also on medicine, if they were pushed back into the arts college with physics and chemistry." I have strong convictions on this issue and hold that a premedical course in embryology falls short of being an adequate substitute for the teaching that can be provided

in the medical school. Neither the outlook of the college instructor nor the teaching material at his disposal is likely to be adapted to the specific needs of the medical student.

WHAT IS EMBRYOLOGY?

There are many kinds of courses in embryology, perhaps as many as the teachers who present them. In evaluating a course we must consider the function of embryology in medical education and the character of teaching which can best serve that function. Objectives that are common to all teaching, such as guidance in self help and scientific method, need not be discussed since we are dealing only with subject content which is peculiar to embryology.

My own conception of the type of course in embryology best suited to medical students is this: a consideration of developmental anatomy and physiology based on a selection of material that will be useful; it should supply both factual information on development and enlightenment on fundamental biology of the human organism. This definition may be best expanded and explained by a description of the course at Tulane. Since its organization in 1919, this course has conformed to a consistent general plan, though modifications of content and order have been introduced each year as experiments toward improvement.

For many years prior to the session which began in December, 1944, gross anatomy and microscopic anatomy together had filled approximately the first half of the freshman schedule. They are no longer taught concurrently. Microscopic anatomy and biochemistry now are scheduled in the first half of the session, gross anatomy and physiology in the latter half.

Histology, embryology and neuroanatomy are presented in that order. (A trial, in one session only, of scheduling embryology first did not work out satisfactorily.) Although the three courses are regarded as independent in administration, as in their grade records, effort is made in the teaching program to break down artificial boundaries. One device is the manner of assignment of the three staff members who are in immediate charge of the courses and who lecture. The person in charge of histology releases the class to the lecturer in embryology for the concluding studies on the reproductive system. The development of the nervous system, the final segment of the course in embroyology, is taken over by the lecturer in neuroanatomy.

There is but small variation from year to year in the time devoted to embryology. In the session recently completed it was 84 hours, including all class exercises, quiz conferences and examination periods. (In the same session histology occupied 150 hours and neuroanatomy, 90.) Embryology is given six mornings weekly, from 8:30 to 12:00. The first hour is devoted to a lecture, after which there is a laboratory period extending to 12:00 o'clock, except on two days of each week when one hour quiz conferences are held. A particular textbook is required, although no specific reading assignments are made. A printed manual, which outlines the mechanics of procedure in the laboratory

studies, is furnished. The students are directed to make drawings as records of their observations, but these drawings are not graded. Each of five staff members is responsible for a section of about 25 students in the laboratory, the instructors rotating weekly from one section to the next. Individual direction and discussion of the work in progress is given as generously as the time of the instructors allows. Examinations include a practical test of familiarity with materials studied in the laboratory and two written tests covering didactic material.

Time distribution is of great importance in the planning of courses. The distribution of hours for the various phases of embryology is governed by our ideas of their relative importance and ultimate usefulness. It is to be taken for granted that a course in embryology cannot be expected to embrace every detail of developmental anatomy and physiology even within the scope of the ordinary textbook. The course, like the textbook, may fall of its own weight if it becomes too ambitious for size. This danger of overgrowth is described with concern by the author of a distinguished text on embryology[5]: "Dominant stocks of animals have been hurried to extinction in past geological ages because their bodies became so big as to be unwieldy. I have seen most valuable and prosperous textbooks killed by overgrowth." The once familiar slogan, "Big books and little teaching," points the same warning. The instructor's task of determining how much to give on each of the topics that might be presented is no small problem, a problem that cannot always be solved by such simple means as following the portioning of the textbook. One text, for example, devotes 64 of its 469 pages to the development of the nervous system exclusive of sense organs—and there are only 12 pages on fetal membranes.

The following list of subject headings, with the number of class periods assigned to each, will serve to indicate the allocation of time in our laboratory work:

Fertilization; Early cleavage (1)
Formation of primary germ layers; Blastodermic vesicle; Twinning (2)
Implantation; Uterus in early pregnancy (1)
Fetal membranes; Uterus in later pregnancy (4)
Development of external form; Determination of fetal age; Death in utero (1)
Principles of teratology (1)
Integument and its appendages (1)
Face; Oral cavity (2)
Pharynx; Respiratory tract (1)
Digestive tract; Body cavities (2)
Heart and blood vessels (1)
Urinary system (1)
Genital system (1)
Nervous system (1)
Organs of special sense (1).

In the concluding segment of histology, the reproductive organs are considered from the standpoint of descriptive anatomy and relevant physiology: the menstrual cycle, ovulation, maturation of the sex cells, etc. Thus the stage has been set for embryology proper, beginning with fertilization and cleavage. The earliest stages of differentiation, implantation and the state of the uterus in early pregnancy constitute a natural unit, which provides also for consideration of the phenomenon of twinning. It will be noted that a relatively large share of time is spent on fetal membranes and the uterus in pregnancy. The laboratory studies of fetal membranes are made on gross specimens of graded ages and histological preparations. Emphasis is placed on functional considerations and on clinically important features. Development of external form in embryos and fetuses is studied in actual specimens, together with the sequelae of death in utero. Principles of constitution and teratology are introduced even as early as in the consideration of the sex cells by reference to the genetic mechanisms and environmental influences on the sex cells which condition some developmental defects. They are repeatedly illustrated thereafter.

The systems of organs are treated with regard to morphogenesis and histogenesis. It should be stressed that no attempt is made to cover some of the very intricate phases of developmental anatomy in which the gain in factual information would be incommensurately small for the amount of time expended. It is our conviction that intimate acquaintance with a few properly chosen developmental processes will yield more lasting values than casual treatment of the subject as a whole. Accordingly, we select for emphasis phases of organogenesis which illustrate representative principles, choosing them especially with a view to usefulness in practical application. The story of organogenesis is abridged by omission of some portions. In following the history of veins, for example, the inferior vena cava is not treated at all. This omission is justified by the fact that principles of the embryology of veins are exemplified in other vessels which are much simpler in description.

In keeping with our view that embryology is a utilitarian discipline, or at least can be made so, the course is centered on human embryology. To be sure, for want of appropriate human material the sequences of many developmental processes are traced in pig embryos—but these are translated into terms of human development. An unusual feature of the course is the availability for laboratory study of a large and diversified collection of specimens. The collection includes normal embryos of graded ages, in many cases together with their membranes, afterbirths at term (illustrating both typical anatomy and variations), pregnant uteri of various stages dissected for exposure of their contents (histological sections from the same specimens being included in loan slide boxes), dissections of fetuses (illustrating points in developmental anatomy such as descent of testis, descent of cecum and appendix, etc.), cleared specimens illustrating skeletal development, examples of obstetrical pathology (ectopic gestations, decidual casts, "missed abortions" and the like), teratomata and a large variety of developmental defects. The specimens used in teaching are mounted in museum jars, and

sets of these demonstrations are placed on display for the periods in which they relate to the subject under study. (The existence and continued growth of this collection may be taken as an index of the interest in embryology which has been developed by our course. Specimens have been and are being contributed not only by colleagues in clinical departments but also by alumni, serving as interns and residents or in practice.)

Each pair of students is supplied with loan boxes of slides, the set containing a complete series of sections of a 13 mm. pig embryo, an interrupted series of a a 25 mm. pig embryo, and sections of various organs from later stages of human fetuses. Demonstrations of other microscopic preparations are set up from time to time.

The daily lectures are designed to guide the students in selection of portions of the text for emphasis in study, to explain those sections of the text and to introduce collateral material. Each lecture affords a preview of the laboratory work of the same class period. However, the course is not merely a catalogue of descriptions of developing structures, for special effort is made to treat the basic principles which are illustrated in embryology.

WHY TEACH EMBRYOLOGY?

We owe to our students a definite and binding obligation to provide instruction that will equip them for an intelligent approach to their work with human beings. Clinical men who have expressed to me regretfully that their knowledge of embryology is deficient have, at the same time, indicated a hopelessness in regard to remedy. It is their feeling that the subject matter of embryology is too unfamiliar and complex for mastery by the practitioner who is handicapped by lack of both time and essential laboratory materials. When obstetricians, surgeons, pathologists and others realize that their training as medical students was incomplete it is high time for the medical schools to take notice. Five students have written recently on "What medical students think about the medical school[6]." These men have an appreciation of the importance of embryology, for they recommend that the subject be included both in the premedical course and in the medical school.

Embryology should be a part of the medical curriculum because it is one of the principal gateways to understanding of human biology. It deserves the attention which has been so forcefully urged by Gregg[7] in his advice to anatomists on broadened perspectives in teaching. The prenatal period is in a sense more eventful than the whole remaining lifetime of an individual. The embryo, like the child, is growing and differentiating. Prenatal growth advances at an amazingly rapid pace. But this growth rate, remarkable as it is, is not as spectacular as differentiation in the embryo. Postnatal differentiations concern structures and functions for which the framework is already laid down prior to birth, in the main during the early weeks of gestation. The prenatal period is critical, indeed, for the future welfare of the individual. The organism is then especially sensitive

to influences of its maternal environment, and it is peculiarly vulnerable when these influences are unfavorable. Accordingly, during this fateful period the individual may be earmarked for good or ill in his future. The earmarking is the result of a prenatal environment which is all too often ignored in thinking on medical constitution. Embryology provides an excellent foundation for the building of proper concepts of constitution. It affords a logical opening for consideration of the mechanisms of inheritance and at the same time environmental effects in the intra-uterine period afford demonstrations of modifiability of the inherited constitution. The unity and harmony of the organism, general behavior reduced to simplest expression, principles of growth and differentiation, modifiability of tissues and organs, phylogenetic history—these are further bypaths that may profitably be followed in embryology. Once the ways of embryological thinking are channeled, no one need worry if the student forgets or had never known the formation of the inferior vena cava or the derivative of the third aortic arch on the right side! All that can be looked up in a book if it is ever needed.

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DISCUSSION

Dr. S. I. Kornhauser (University of Louisville, Louisville, Ky.): During this year George W. Corner has published a most excellent little book called "Ourselves Unborn." If anybody has an interest in embryology, he should read that book. It is really a delightful little book, and it will give one an insight into the marvelous work that has been done in the last few years by Hertig and Rock on the first two weeks of human development, and in a very nice way, because George Corner is a marvelous writer. So I would advise any executive or dean to look into that book, if he has any doubt as to the importance of embryology and its meaning.

Distribution of Medical College Students by Residence

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The shortage of physicians in certain areas has frequently been attributed, in part, to the shortage of medical students, which in turn has been attributed, in part, to the lack of medical colleges within the same areas. This point of view is based on the hypothesis that medical students will naturally want to attend schools in their home states and that they will tend to return to their home communities to practice. With specific reference to the supply of rural physicians, it has been thought that the situation would be improved substantially if more rural youth were encouraged and aided to study medicine.

It is the purpose of this note to present and analyze some data on the distribution of medical students which will throw much needed light on the questions mentioned above. The data selected for this study are the enrollment records of the medical school students enrolled for the first time in the 1939-1940 school year. These records show among other things the following pertinent facts:

(1) Name of the medical school.

(2) Home address, showing number and street, city and state. A tabulation was made of each record to show the number of medical students by state of residence and size of community (population per center) as shown in the United States Census of 1940. Another tabulation was made by medical school and size of home community. From these tabulations the tables of this report were derived.

DISTRIBUTION BY STATES

Table 1 and Figure 1 show the distribution of first year medical students by states and by residence. The lower section of table 1 shows a comparison of states with and without medical schools. There is a great variation in the student population ratio from state to state, Utah with the highest and New Mexico with the lowest ratios.

There is apparently no relation between medical school locations and student-population ratios. States without medical schools or with only the basic two year schools have relatively just as many students taking medicine as do states with regular four year schools. This lack of relationship is quite important, because it means that one important argument for the establishment and/or expansion of medical schools would probably have little effect on the relative standing of the states with regard to the proportion of the population studying medicine.

This does not mean, however, that new medical schools are not needed in order to increase the total number of physicians in America as a whole. It does mean very likely that state lines are relatively unimportant in the location of any new medical schools.

DISTRIBUTION BY RURAL-URBAN RESIDENCE

Table 1 shows further that there are relatively more urban than rural young people enrolled as first year students in medical schools—ratios being 66.4 and 18.6 students per million population respectively. Only 12 of the 6,011 students listed an address on a rural route. Probably others lived in the country but gave

TABLE 1.—DISTRIBUTION OF FIRST YEAR MEDICAL COLLEGE STUDENTS BY RURAL-URBAN RESIDENCE. UNITED STATES AND EACH STATE. 1938-40.

United States and States	Number of First Year Medical College Students			First Year Students Per Million Population			
	Total	From Urban Areas	From Rural Areas	Total	In Urban Population	In Rural Population	Student-Residence Ratio*
United States	6,011	4,945	1,066	45.7	66.4	18.6	100
Alabama	91	80	31	32.1	70.1	15.7	53
Arizona	18	15	3	36.1	86.2	9.2	----
Arkansas	76	58	18	38.9	134.3	12.0	112
California	295	267	28	42.7	54.5	14.0	32
Colorado	68	59	9	60.5	99.9	16.9	34
Connecticut	87	83	4	50.9	71.6	7.3	62
Delaware	10	10	------	37.5	71.7	------	----
District of Columbia	43	43	------	64.8	64.8	------	398
Florida	70	63	7	36.9	60.2	8.2	----
Georgia	106	85	21	33.9	79.2	10.2	166
Idaho	20	18	2	38.1	101.9	5.7	----
Illinois	364	334	30	93.4	57.4	14.4	144
Indiana	167	127	40	48.7	67.2	25.9	74
Iowa	107	74	33	42.2	68.3	22.7	79
Kansas	117	88	29	65.0	116.7	27.7	80
Kentucky	82	53	29	28.8	62.4	14.5	128
Louisiana	126	105	21	53.3	107.1	15.2	171
Maine	23	17	6	27.1	49.6	11.9	----
Maryland	93	73	20	51.1	67.6	27.0	182
Massachusetts	219	184	35	50.7	47.7	76.5	141
Michigan	200	177	23	38.1	51.2	12.8	94
Minnesota	125	102	23	44.8	73.3	16.4	82
Mississippi	80	49	31	36.6	113.2	17.7	34
Missouri	138	105	33	36.5	53.6	18.1	187
Montana	24	15	9	42.9	70.9	25.9	----
Nebraska	104	67	37	79.0	130.3	46.2	143
Nevada	6	5	1	54.4	115.5	14.9	----
New Hampshire	21	15	6	42.7	53.0	28.8	96
New Jersey	240	219	21	57.7	64.5	27.4	----
New Mexico	11	6	5	20.7	34.0	14.1	----
New York	739	673	66	54.8	60.3	28.5	192
North Carolina	145	99	46	40.6	101.6	17.7	96
North Dakota	35	16	19	54.5	121.3	57.3	74
Ohio	299	254	45	43.3	55.1	19.6	78
Oklahoma	84	66	18	36.0	75.0	12.4	77
Oregon	58	48	10	53.2	90.3	17.9	116
Pennsylvania	513	453	60	51.8	68.8	18.1	127
Rhode Island	28	27	1	39.3	41.3	16.7	----
South Carolina	77	54	23	40.5	115.9	16.0	79
South Dakota	36	26	10	56.0	164.5	20.6	67
Tennessee	114	79	35	39.1	76.9	18.5	227
Texas	218	179	39	34.0	61.5	11.1	86
Utah	64	57	7	116.3	186.6	28.6	48
Vermont	30	22	8	83.5	178.5	33.9	107
Virginia	108	67	41	40.3	70.9	23.7	133
Washington	79	64	15	45.5	69.4	18.4	----
West Virginia	86	52	34	45.2	97.3	24.9	30
Wisconsin	155	127	28	49.4	75.6	19.2	110
Wyoming	12	5	7	47.9	53.4	44.5	----
States with No Approved Medical School							
12 States	541	464	77	44.7	62.9	16.3	60
States with Two Year Medical Schools Only							
7 States	413	275	138	44.7	101.8	21.1	49
States with Four Year Medical Schools							
29 States	5,057	4,206	851	45.8	65.4	18.5	115

* Ratio per 100 of students enrolled in schools of each state to students from each state.

Source: Special tabulation of records of the Association of American Medical Colleges.

only their village or town post office as their address. This is customary in many parts of the country.

The ratios shown in Table 1 do not give a perfectly true picture of the rural-urban differences because of the definition of rural population used. Rural population in the usual census tables means people who live in incorporated towns and villages less than 2,500 in population or in unincorporated areas. The joker in this classification of population is that about 6 of the 57 million so-called rural population are actually residents of the unincorporated cities, towns and villages and that an additional 13 or 14 million are residents of unincorporated suburbs on fringes of larger cities. Furthermore, about 9 per cent of all rural towns and villages are within metropolitan districts and many others are near to other cities between 2,500 and 50,000.

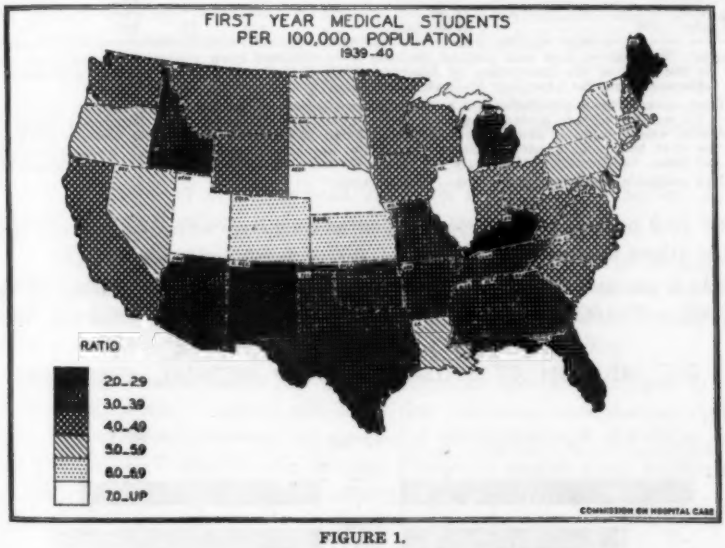

FIGURE 1.

This weakness in conventional population statistics can be largely overcome by redistributing the population of unincorporated areas among cities, towns and villages. After all, open country population live around and are served by trade centers of various sizes. In Table 2 the population of open country areas has been allocated to population centers in the following manner:

(1) Population of unincorporated cities, towns and villages has been combined with that of incorporated places of corresponding size groups. (2) Rural-nonfarm population living in the open country, since it is largely urban fringe population, has been allocated to population centers in proportion to the population already there. (3) The rural-farm population living in the open country has been allocated among cities, towns and villages in proportion to the number of such centers. That is, each of the 20,346 centers received about 1,457 of the rural-farm population which resides in the open country.

Even after redistributing the open country population there is still a deficit of medical college students from the smaller communities. (See Table 2 and Fig. 2.) But the differences between the rural and urban ratios are not so great as indicated by Table 1. Even the smallest communities (those under 1,000)

TABLE 2.—DISTRIBUTION OF FIRST YEAR MEDICAL COLLEGE STUDENTS IN 1939-1940, COMPARED WITH DISTRIBUTION OF ACTIVE PHYSICIANS, 1941.

Size of Place	Distributed Population* 1940	Physicians 1941	Medical Students 1939-40	Personnel Per Million Pop. Physicians	Personnel Per Million Pop. Students	Ratio of Students to Physicians
Total Population	131,669,275	150,523	6,011	1,143	45.7	1 to 25
Over 100,000	43,294,223	69,933	2,284	1,617	52.8	1 to 31
25,000-100,000	17,571,443	21,849	1,022	1,243	58.2	1 to 21
5,000-25,000	23,852,908	22,136	1,202	928	50.4	1 to 18
Under 5,000	47,450,124	36,605	1,503	771	31.7	1 to 24
2,500-5,000	9,479,790	**	437	**	46.1	**
1,000-2,500	13,965,612	**	441	**	31.6	**
Under 1,000	24,004,742	**	625	**	26.0	**

Source: The data on first year medical students were obtained from a special tabulation of records in the office of the Association of American Medical Colleges; and the data on physicians were obtained from the American Medical Association.

* Open country farm population has been distributed among cities, towns, and villages, in proportion to the number of such centers. Open country nonfarm population has been distributed among cities, towns, and villages in proportion to the population in such centers. This is done on the assumption that the open country nonfarm population lies almost entirely closely around large towns and cities. Consequently, the larger the center the more of this population should be allocated to it.

** Not available for groups other than "Under 5,000."

have 26.0 medical students per million as compared with 52.8 for the largest cities (those over 100,000).

It is somewhat surprising to find that city centered communities of from 25,000 to 100,000 have the highest student-population ratio—58.2 per million.

DISTRIBUTION OF PHYSICIANS AND MEDICAL STUDENTS

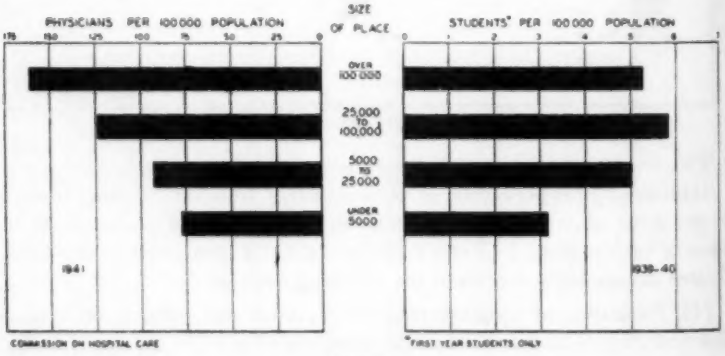

FIGURE 2.

PHYSICIANS AND STUDENTS

In order to test the hypothesis that the distribution of students has some influence on the distribution of physicians, the physician population ratios have been shown in Table 2 and Figure 2. Obviously, the patterns of distribution are

far from being identical. The highest physician-population ratio is in the largest city-community group—1,617 per million as compared with only 771 per million in the under 5,000 group. Data on physicians for communities 2,500, 1,000-2,500, and under 1,000 were not available.

The ratio of students to physicians is highest in communities of the 5,000-25,000 class and lowest in the largest city group. A student-physician ratio of 1 to 25 is not considered out of line, since the active career of most physicians covers from 25 to 30 years. If rural students did return to rural areas, they could certainly replace the number of physicians there now.

Another interesting and significant finding of this study is that the distribution of physicians by states is highly correlated with the average incomes of states; but such is not the case with medical college students. The distribution of medical college students is related primarily to rural population; but, of course, rural states do have lower average incomes than the urban states.

CONCLUSION

Insofar as the data of this study are concerned, two general conclusions may be drawn:

1. The absence of medical schools in certain states has little bearing on the number of medical college students from such states.

2. There is a marked deficit in the number and proportion of medical college students from the smaller communities and from rural areas, but the deficit of physicians in such communities being even more marked, cannot be attributed to the deficit of medical college students from these communities.

This study has not shown how more rural youth may be encouraged to study medicine. However, if anyone still hopes that procuring more medical students from rural areas will increase the number of rural physicians this study shows that they will very likely be disappointed. Certainly, capable rural youth should be encouraged and aided to study medicine, but that is another problem.

The Challenge to Pharmacology*

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The sixteenth of this month was a red letter day in my brief experiences in pharmacology. It was my privilege to have visited with Dr. Otto Loewi, the Nobel prize winner. You all will recall his fundamental discovery of acetlycholine as the humoral substance responsible for exciting a parasympathetic endorgan to function. This unusual man of science is now in New York as research professor of pharmacology at New York University. Although he was driven from his native Austria by Nazi madness, was deprived of most of his tangible possessions, and not even permitted by the Nazis to receive his Nobel prize in Sweden, this exceptional individual was not soured by these harrowing experiences, but rather has been stimulated by adversity to new heights of achievement. At 72, Dr. Loewi is not resting on his laurels but he is busy every day in his new environment, conducting fundamental research in relation to nerve conduction and cardiac function. He loves New York, his new country, his new friends, his new language (and he speaks beautiful English!); his sense of humor is unusually keen and his engaging philosophy has sublimated from a wealth and variety of experiences. These two hours with Dr. Loewi form the inspiration for this present discussion. The title, "The Challenge to Pharmacology," might well read—"The Challenge to Pharmacologists."

Advances in pharmacology have been numerous and, at times, almost dramatic during the last three decades. To these advances not only pharmacologists but experimentalists in most fields of science have contributed. One is impressed with these findings by reading the editorial comment in the March 10, 1945, issue of the *Journal of the American Medical Association*. Here are listed the ten most important drugs in use in 1910. In striking contrast are those listed recently by sixteen professors of medicine who were sent questionnaires by the editor of the *Journal*. Note the trend toward biologic preparations and toward those of synthetic, purified nature and possessed of specific, well circumscribed actions. Polypharmacy and shotgun, empirical therapy have given way to more rational medication and treatment.

Advances have not been limited to certain phases of pharmacology. Practically every field of pharmacology has felt the impact of intensive research. To touch on only a few, let us review briefly first that of anesthetic agents. Ether, by the open drop method, perhaps, is still the safest anesthetic in average hands but it has its disadvantages and, hence, the great activity on the part of pharmacologists to find better agents which are not explosive, nonirritating, nontoxic, etc. As a result of these investigations, we still have chloroform which is nonexplosive but extremely toxic, especially to the liver and capillaries; cyclo-

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* Read at the University of Georgia Medical School Assembly, April 27, 1945.

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propane, which is nonirritating but which is highly explosive; nitrous oxide, which is relatively safe but asphyxiating; tribromethanol (or avertin), which produces sleep slowly and uniformly after rectal insertion but which may produce local irritation, liver damage or severe depression, since it is not as easily controlled as some other anesthetics. Even those recent synthetics introduced by Dr. John Krantz, cyprome and cypreth ether, are not entirely devoid of hazards. And, then, there are the various local anesthetics whose duration of action can be controlled with comparative ease and safety, depending on the area to be anesthetized regionally, topically, perineurally, intraspinally, or caudally. And, finally, the intravenous barbiturates were offered for speedy and convenient anesthesia. But all of the available anesthetics are inherently possessed of some disadvantages, as we so well know. Not only what is given, but how it is given, so frequently determines the outcome. Just as important, perhaps, is the patient to be anesthetized! (After all, he should be given some consideration, despite his inability, as a rule, to make an appropriate choice for himself.) This, the anesthetist does; this is his prerogative, since his is such an important contribution to good surgery. It is he who fits the anesthetic to the patient, not the patient to the anesthetic. Good surgeons appreciate good anesthesia and the anesthetist can pay in kind by appreciating the import of meticulous surgery and "surgical kindness" to tissues. But today, despite numerous advances in the field of new anesthetic agents, we still await the introduction of the ideal anesthetic. That is a challenge to pharmacology!

We hear much today about penicillin, sulfonamides and other agents of this type. Not yet ten years old clinically, the sulfa drugs have already saved hundreds of thousands of lives. Each has its fundamental action but each varies somewhat from its associates in its specificity of action. Some affect many organisms; others less. Of special interest to us in our South Pacific campaign against the Japs is sulfaguanidine. It is this magic bullet, specific against bacillary dysentery, which won for us the Owen Stanley range in New Guinea. The Japs and Yanks alike were afflicted with bacillary dysentery. Japs were dying like flies! We had sulfaguanidine and did not die. This meant eventual superiority so that we could continue northward from Port Moresby over the Range to the northern shore of New Guinea. We are all well aware of this struggle and in the light of events since, we realize the import of this military and chemotherapeutic advance. An army truly marches not only on its stomach but also on its drugs.

However, the sulfa drugs were, and are not, without hazards as we all know, hence, the discovery of penicillin was most opportune. The pity of it is that Fleming's original observations on penicillium notatum, made in 1929, lay dormant for the clinical world for almost a decade, even as sulfanilamide's virtues were kept from us for almost a quarter of a century. What the experimentalists have wrought in the development of sulfonamides, penicillin and other chemotherapeutic and antibiotic agents, is monumental, but their task is not yet complete. Sulfonamides still produce side reactions, some of which are severe. Penicillin affects many organisms but unfortunately is not all inclusive; it still

leaves several of our most common bacterial offenders unaffected. We need safe antibiotics which will cover more of a bacterial range than penicillin does. This is a challenge to pharmacology.

A small but important phase of pharmacology concerns itself with routes of administration. This is well demonstrated by the introduction of penicillin into the patient by frequent intramuscular injections of continuous intravenous infusions. In an effort to prolong the optimum blood level of penicillin in the infected patient we learned successively of the following: Incorporation of penicillin in beeswax and peanut oil; incorporation of penicillin in gelatin; addition of an ice pack to injected area to delay absorption of penicillin; addition of vasoconstrictors to penicillin to delay absorption; addition of vasoconstrictors to penicillin in gelatin; buffering of penicillin by trisodium citrate or colloidal aluminum hydroxide for oral administration; incorporation of penicillin in rectal suppositories.

All these milestones mark efforts to "spare" precious penicillin. This was a challenge and it was met successfully. In this picture of providing adequate penicillin for our armed forces and for the civilian populace, one must rightfully ascribe credit to those forces of industry which bent every effort in this direction, in coöperation with the Office of Scientific and Research Development. Their greatest reward will be the contribution they made.

Another pharmacologic contribution is that of 1-methyl-4-phenyl-piperidine-4-carboxylic acid, known as demerol. This was a timely introduction of an addition to the analgetic field because it came as a result of Pearl Harbor, in a way. Research on this drug had begun in this country in 1941, but its pace was soon accelerated because of the danger attending Japanese invasion of Asiatic countries which were sources of our morphine supply, the Oriental or opium poppy. China was cut off; Egypt threatened; Iran and India in danger of being cut off, and at this time most careful estimates by federal authorities gave us enough morphine for only about two years. About half a dozen laboratories and clinics set about feverishly studying this drug as a substitute for morphine. Approximately one year ago, it became available to the medical profession. It has the advantage of being capable of synthesis and this is not true of morphine; it is effective orally, is not constipating, and it is much less addictive than morphine. Although not quite as effective as morphine in analgetic potency, it is more effective than codeine. Thus, another challenge to pharmacology was met, but not entirely. We still need a complete substitute which will duplicate morphine in all of its desirable features, but in none of its disadvantages. This may be asking too much of the pharmacologist but it is nevertheless a real challenge to him.

Thus far only a very few fields of pharmacologic activity have been mentioned. Nothing has been said about the advances made in the treatment of malaria, filariasis, syphilis, gonorrhea, typhus and many other diseases. We have not touched on the vitamins, hormones, vaccines and sera, nor on the decrease in toxicologic industrial hazards. Neither will time permit more than this

brief mention. Time allows for only the brief reference to treatment of myasthenia gravis with prostigmine, or of schizophrenia with insulin or other forms of so-called "shock" therapy. Despite the progress made, our path still lies before us. The future has its problems, its challenges, its hopes.

Where do we stand on cancer? On tuberculosis? On cardiorenal disease? On other most common causes of death?

Our Census Bureau informs us that in 1943 mortality rates shown in deaths per 100,000 were higher in almost every instance when compared with those of 1942. These figures are astounding and challenging!

Look at cancer. It does not lead the list but it is altogether too offensive as a killer. Enormous sums of money are rightfully turned into research of this public enemy; and comfort and life extension have been afforded to many people. However, its cause is still elusive; early diagnosis too often escapes us and advanced stages of the disease still refuse, too often, to lend themselves to medical and surgical care. We must not only find its cause and thus hope to prevent this disease, but we must make every attempt to stop it in its tracks, kill it by some form of medical mallet or boaconstrictor, and then hope to repair the damage left in its wake. Pneumonia, dysentery, septicemia and pyelitis may not always be prevented but they may frequently be arrested and aborted during the attack. Can we do the same with cancer? What can we find besides radium and x-ray which may safely complete, or replace their lethal action on malignant tissue and do it so selectively that little, if any, accompanying damage is inflicted on surrounding healthy tissue? Is this too much to hope for? Who may yet find some antibiotic or enzymatic inhibitors to fill this bill? This may be only wishful thinking or an idle dream but it is a real challenge to pharmacology!

And how about tuberculosis? This is still a great killer as well as serious incapacitator. It is certainly assuming a larger role in laying low many more subjects during these trying days of great stress and strain, and overwork. In our own field, too many medical students, physicians and nurses are becoming afflicted with tuberculosis. It was especially true during my last three years in Detroit. In one senior class of 65, four students were seriously afflicted with tuberculosis. This would be a heavy price to pay for the accelerated program if the latter were the only cause for the higher incidence of this disease. Compared with the price paid daily by our colleagues on the battle front, this is small. One must recognize that tuberculosis is on the march, not only here but across the seas. Can you dare to imagine what the picture of this disease will be postwar in the war torn, ill housed and undernourished people of Europe? Prevention is one thing; protracted convalescence under ideal conditions is another, but specific medication is needed in this situation. If wholesale medication with sulfadiazine can cut down the epidemic propensities of upper respiratory infections, including scarlet fever, in our armed forces, as Commander Coburn of the United States Navy has reported,[1] we may rightfully hope that some similar chemotherapeutic agent may be of some value prophylactically or curatively in relation to tuberculosis.

This disease has not gone untouched by either in vitro or in vivo studies of some promise. Perusal of scientific literature gives some indication of the great amount and good calibre of work being exercised in this field. Of late we have learned of the antituberculous actions of certain antibiotics, such as aspergillin and streptomycin[2] in vitro and in vivo. This affords definite hope. Of considerable interest also has been the work of Feldman, Hinshaw and associates[3]. Some of you recall their results in treating tuberculosis in guinea pigs with promizole, or 4,2′-diamino-phenyl-5′-thiazolesulfone. This synthetic drug, not too far removed chemically from sulfathiazole, is an improvement over its predecessor, diazone, and is now being studied in clinical subjects, with some fair degree of promise. Although the dose is relatively large and although as yet not too much is known about all of its side effects on long continued administration to the patient, this chemotherapeutic agent is a step in the direction of the final goal, the conquering of tuberculosis chemotherapeutically. This is a real challenge to pharmacology!

Our greatest incapacitator and killer is cardiovascular and cardiorenal disease. It heads the list! It is on the march! What is the cause? Is it the speed of living? Is it dietary or hereditary? Brave, indeed, is he who says he knows; he charges in where angels fear to tread. What can be done besides putting the patient on a less intensive and more restrictive regimen. Fortunately, palliative agents may afford temporary, symptomatic relief but our goal should be higher than this. If we could prevent the damage inflicted in some patients suffering from hypertension, which is only part of the cardiovascular disease picture, our efforts will have been worth while. Admittedly, there is little of correction which can be made in the arteriosclerotic or malignant hypertensive subject but in the benign type of hypertensive patient, who may have hypertension of neurogenic origin, some degree of correction might be hoped for. It is to this situation I direct your attention.

Life is a constant attempt to stay in balance, not only to keep our perspective mentally but to maintain a status quo physiologically. Into this play of events enter many features, among which we find prominently, humoral substances, water balance and control by the autonomic nervous system. It has been said: "Know these and you know medicine." This takes in considerable territory and whoever made such a statement was doubtless in a generous and expansive mood. Nevertheless, considerable truth attends this dictum and being prejudiced by considerable interest, I direct your attention to the latter member of this trio—the autonomic nervous system.

Anatomically and physiologically, nature treated us rather kindly when she endowed us with a dual autonomic control of many of our important organs. Why she missed in some situations and took such special precautions of adequate duality in others is still a moot point. On the other hand, she was unkind in permitting one system to gain the upper hand in certain patients, which may result in symptoms of imbalance or disease. To cite only a few in the picture of parasympathetic or cholinergic predominance we have bradycardia, gastric

hypersecretion and coronary spasm, and, as symptoms of overactivity of the sympathetic or adrenergic influences, we have tachycardia, megacolon and probably neurogenic hypertension. To overcome the hyperactivity of cholinergic control such anticholinergic agents as atropine and other belladonna-like constituents can be employed, or, as Dragstedt has recently done[4] in some of his patients, relieve severe gastric hyperacid secretion by supradiaphragmatic sectioning of the vagus nerve. Similar attempts have been made to correct symptoms due to overactivity of the sympathetic or adrenergic control, as in the case of megacolon, neurogenic hypertension and edema accompanying thrombophlebitis. As yet, there is not available any single drug which will insulate successfully the endorgan, muscle or gland, against its sympathetic neural control in a manner similar to that afforded by atropine in protecting endorgans against their parasympathetic neural control. However, many attempts have been made in this direction.

We are all familiar with the classical experiment of Dale in which ergot was employed in the form of ergotoxin to reverse the effect of adrenalin on the blood pressure of an anesthetized animal. After ergotoxine the normally hypertensive response to adrenaline (or epinephrine) becomes hypotensive. This is referred to as "adrenaline reversal." What really happens in this situation is believed to be a paralysis of the sympathetic vasconstrictor fibers (SE) in the vascular bed, allowing epinephrine to relax bloodvessels either directly by muscular depression or by way of stimulating vasodilator fibers (SI) associated with certain bloodvessels. The important point is, however, the fact that motor or constrictor influences normally exerted by sympathetic nerves are nullified by adequate amounts of ergotoxine or ergotamine tartrate (Gynergen). The amount of ergotoxine usually required to demonstrate this phenomenon is from 3 to 6 mgm., or more, per kg. intravenously. This is apparently far in excess of what a patient could endure safely. An unanesthetized dog, trained to lie quietly while the motility of the colon was being studied, became extremely ill when only 23 micrograms per kg. of ergotamine tartrate were administered intravenously. Colonic motility was tremendously augmented, skeletal tremors prevailed, retching, vomiting and defecation were invoked and even then, in the presence of this toxic amount of ergot, the relaxing effect of adrenaline still prevailed, indicating that adrenolysis or loss of adrenaline effect had not been established. Thus ergot, although experimentally promising in some situations, has failed as an adrenolytic agent in others and, hence, offers little hope as an adrenolytic drug clinically.

Other agents have also been studied experimentally. Among these one finds the Fourneau compounds, known as dioxane derivatives, F 933, 2-piperidinomethyl-1, 4-benzodioxan, and F 833, 2-diethylamine-ethyl-1, 4-benzodioxan, as those most commonly studied. Melville[5] has made an extensive study of various drugs affecting the vascular system and he corroborates earlier observations that these Fourneau dioxane derivatives are capable of reversing the vascular effect of adrenaline. Recently Bing and Thomas[6] observed that these agents were of some value in alleviating, temporarily, the neurogenic type of hypertension in

dogs. Whether these compounds will be of any value clinically may be doubtful at present, because of their toxicity. In the latter respect they seem, however, to be an improvement over ergot preparations.

Another substance which has adrenolytic properties is yohimbine. Formerly it had a reputation, justified or not, as an aphrodisiac. Many investigators have found this drug to be an excellent pharmacologic tool for purposes of demonstrating the so-called "epinephrine reversal." The ethyl ester of yohimbine HCl, in 3 mgm. per kg. dosage, is not only adrenolytic for vascular effects, but it is likewise adrenolytic and sympatholytic for sympathetic or adrenergic salivation in dosages ranging between 3 and 7 mgm. per kg., in animals under urethane anesthesia[7]. Reed and her co-workers[8] have found yohimbine to be of some value in early but not in late experimental hypertension of the Page perinephritic type, in rats. We have found yohimbine to be of some limited value in the same type of hypertension in dogs.[9] Toxicity studies seem to indicate that this drug should be studied cautiously in early neurogenic hypertension. It is well tolerated in divided dosage by dogs, and in drinking water chronically by rats,[10] up to 1:5,000 concentration.

More recently another adrenolytic and sympatholytic agent has appeared in the experimental field. It is termed priscol and is a benzylimidazoline. It is closely related to privine, which is a naphthyl, methyl imidazoline. It is extremely interesting that a change from the naphthyl to the benzyl configuration can result in such a divergence of action, namely from the hypertensive state to that of hypotension.

Priscol is markedly hypotensive even in a dosage of 1 to 3 mgm. per kg. in the urethanized cat, but as 5 and 10 mgm. dosages are approached, hypotension is more enduring and adrenolysis can be demonstrated. A dose of 15 mgm. produces a drop in pressure of 50 per cent or more and it endures for 3 or 4 hours, during which not only adrenolysis and sympatholysis prevail for splanchnic control of blood pressure but also for cervical sympathetic control of salivation. These functional losses are often confused as being identical. They are not the same; adrenolysis denotes a loss of response to adrenaline, or epinephrine, whereas sympatholysis denotes a failure of response to faradization of the sympathetic nerves. Almost invariably, adrenolysis occurs with a given adrenolytic drug before sympatholysis sets in. The latter state requires, as a rule, a higher dose of the adrenolytic agent.

Thus, we see that adrenolysis and sympatholysis can be produced by different agents, ergotoxin, yohimbine, certain dioxane derivatives and priscol, all of which seem totally unrelated chemically. Some of these agents may warrant careful study in certain clinical conditions characterized by vascular spasm, as for example, Raynaud's disease, in which Lindquist[11] employed priscol with significant success. On the other hand, agents of this type are not devoid of toxicity and this must be our goal—to produce specifically acting sympathetic blocking agents which cause a minimum of side reactions. Because of the varied types of chemical nuclei now available for adrenolysis and sympatholysis, the goal does not seem too remote.

Now, one rightfully asks, of what significance are these interesting experimental results? Of what clinical import are adrenolysis and sympathetic depression as observed experimentally? The fact that they can be established, even though chiefly, as yet, only in the anesthetized animal, offers hope to those who believe that overactivity of the sympathetic nervous system should be checked by means of a "medical scalpel," rather than by surgery alone, or that they should be used as an adjunct to surgery.

Undoubtedly, an agent of this type would not have a place in arteriosclerotic hypertension and probably not in malignant hypertension, but if there is such a clinical entity as neurogenic hypertension, sympathetic or adrenergic in origin, an insulating drug of this type might conceivably be of some value, provided its action could be directed regionally and quite specifically toward those neural vasoconstrictor components affected. This should tend to correct the vasospasm responsible for this type of hypertension.

One might go a step further and state that even early renal hypertension might be favorably affected on the following basis: regional vasospasm can be responsible for symptoms such as prevail in Raynaud's disease. This may be limited to any or all of four limbs. This is regional. Likewise, a regional vascular spasm may prevail in brain areas as may occur in petit mal and spastic migraine, in the retinal and coronary arteries, in the uterus and other splanchnic areas. It would seem that if the afferent vessels of the renal glomeruli and other renal arterioles may be constricted by epinephrine, they may also be regionally spastic at times due to splanchnic sympathetic or adrenergic influence. If this spasm is permitted to remain, the Page sequence of renin and angiotonin production (or the failure of production of adequate amounts of the normally hypotensive agent of Grollman), would result in hypertension in the general circulation, and, perhaps, the spasm in the renal parenchyma might be augmented. If spasm of sufficient intensity and extent prevailed for a sufficient period of time, this functional spasm could conceivably lead to morphologic damage which would add still more insult to the already existing injury. In this situation, a vasodilator of the adrenolytic type might act designedly in this early spastic vasculature to nullify or diminish the possible production of angiotonin which, if unopposed and augmented, might be the chief reason for the change of a labile, spiked hypertension to that of a fixed type. Angiotonin acts like pituitrin directly on the smooth muscle of blood vessels[12] and, with chronic production in the kidneys, over a period of months or years, it might result in, first, a functional, and then later a morphologic change in regional bloodvessels, but, perhaps, rather generally distributed, not only in the kidney but elsewhere.

To repeat, if early spasm could be released by the proper vasodilator, preferably of the adrenolytic or sympatholytic type, one might prevent a functional renal hypertension from progressing to that more serious type attending morphologic changes in the vasculature, from which there may be no recovery. To gain this goal is to believe that such pressure reduction is desirable. This might

be a debatable point. Some hold to the idea, as you know, that hypertension is merely a compensatory mechanism to maintain glomerular filtration pressure. On the other hand, if relief of symptoms and pressure reduction are compatible with proper renal function, as is often the case, the attempt to reasonably reduce increased pressure by surgical or medical means seems justified in selected patients. To do this safely, judiciously and without significant interference of other functions of the autonomic nervous system is the hope of investigators in this field. We need specific or directional therapy. This is a real challenge to pharmacology, in many cases, since hypertension and, possibly, neurogenic hypertension as its base, is such an important factor in the cause of death from cardiovascular and cardiorenal disease. This may be a difficult goal to achieve. All research is difficult! Nothing genuinely worth while ever came easily in scientific research. Someone has said that the more meager the facilities, the greater the enterprise and originality. Likewise, the greater the problem, the greater the challenge.

In closing, I return to my chat with Dr. Loewi earlier this month. During this enjoyable interlude, numerous pearls were dropped by this master. Among them I recall that gem by Robert Louis Stevenson: "To travel hopefully is a better thing than to arrive, and the true success is to labour." And that other jewel from Robert Browning: "A man's reach should exceed his grasp, or what's heaven for?"

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The Army Specialized Training Program

It has been definitely decided by the authorities in Washington that the Army Specialized Training Program will be discontinued after June 30, 1946. Medical students enrolled in this program will be placed on the inactive status at the termination of the present academic year. In some schools this will happen in March and April; in others some time in June. These students if they continue their medical studies will do so as civilians, paying their own way. It is possible that they may have some entitlement under the G. I. Bill of Rights which, if true, will help to finance their further studies. Information is not at hand at this time as to what the Army will do with those students in the program who may decide not to continue their medical studies. It will be recalled that the Navy has planned to assign such students for duty with the fleet. The Army may act similarly by assigning these students to service with the troops. The last students who are enrolled in this program will graduate in 1948 unless acceleration is discontinued by the medical schools, in which case the last group will not be graduated until 1949. At any rate, education paid for by the Government will not be continued after June 30, 1946, when present appropriations for this work will be exhausted.

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The 9-9-9 Program

Word has already been received by all medical schools as to the chance that has been made in the 9-9-9 Program. Beginning July 1, 1946, internships will be of twelve months' duration until such time as a further change of plan is made by the Army. At the conclusion of this service, the intern will be called to active duty as a replacement for medical officers who have seen years of service with the Armed Forces.

It is planned by the Army to fill all residencies and assistant residencies with medical officer veterans. This plan if carried out as contemplated at the moment, will make it impossible for either school or hospital to advance an intern into one of these positions. The Army feels that the experience in the field gained by a veteran medical officer will make him a better resident than would the intern. Furthermore, there will be no quota for residents and assistant residents. If information at hand is correct, these men will be assigned by the Surgeon General's office to this duty, which means that they would still be in service but on special assignment. This assignment may be for one or more years, depending on quality of service given by the incumbent. Hospitals and medical schools should check carefully with the Surgeon General's office before taking any action one way or the other.

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Deceleration

It is now possible for medical schools to decelerate and return to the old order of things by the Fall of 1946. Selective Service has definitely announced that deferment will be granted to all medical students attending regular courses in a medical school and during a normal vacation period, which is interpreted as meaning three months.

Most medical schools can easily comply with this directive since their courses end some time in June; a few medical schools will find themselves facing a

problem because their courses end in March or April. A number of colleges have announced that they will fill in three months by assigning the students to some service in the hospitals or clinics, thus lengthening the courses sufficiently to carry them over into June. Other schools have announced that they would like to use this time to help returning medical officers continue their interrupted education, or to refresh themselves. Selective Service has been approached for a ruling on whether deferment will be given to undergraduate medical students whose year ends in March or April. At any rate, medical schools can decelerate either all four classes or for the freshman class which will be enrolled in the Fall of 1946. Information received up to this time indicates that the medical schools will prefer to decelerate all four classes.

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University of the Philippines College of Medicine

At the Pittsburgh meeting the very earnest plea was made by the delegates from the College of Medicine of the University of the Philippines for help to rebuild their medical library, which was completely destroyed by the Japanese. A number of organizations, such as the American Library Association, and the Association of American Libraries have already taken a very lively interest in cooperating in this campaign. Book publishers have also agreed to help. Medical authors can be of great assistance if they will contribute reprints of each of the articles published in recent years. The doctors in Manila have not been able to keep up with any advancements in medicine since 1941. Therefore, any reprints, records of publications and journals issued since that time will be a treasure for these men. The Library of the Bureau of Science was easily comparable to some of the best libraries in the United States. Nothing is left of this fine collection; even the building was destroyed. Shipments can be made by parcel post direct to the College in Manila, or shipping directions may be obtained by writing to Dr. Arturo Rotor, Technical Assistant to the President of the Philippine Commonwealth, 1617 Massachusetts Avenue, Washington, D. C.

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Committee for the Promotion and Protection of Animal Experimentation in Biological, Medical and Dental Research and Teaching

To the Executive Council of the Association of American Medical Colleges:

Pursuant to the adoption by the Executive Council and the Association of the report of your Committee for the Promotion and Protection of Animal Experimentation in Biological, Medical and Dental Research and Teaching presented at the last annual meeting of the Association and in accordance with the fourth recommendation of the report, to wit: "That a temporary, organizing Board of Directors of the Commission be appointed on a regional basis by the Executive Council on recommendation of the Committee presenting this report," the Committee recommends the appointment of the following temporary organizing Board of Directors: Drs. R. B. Allen, Thomas G. Barbour, Alfred Blalock, C. Sidney Burwell, Eben J. Carey, A. J. Carlson (Chairman), L. R. Chandler, Wilburt C. Davison, R. E. Dyer, Ernest W. Goodpasture, J. C. Hinsey, A. C. Ivy (Secretary-Treasurer), C. D. Leake, Ewen M. MacEwen, William S. McEllroy, B. O. Raulston, P. A. Shaffer, Isaac Starr, Edward L. Turner and Fred C. Zapffe.

The Committee also suggests the appointment of the following Executive Committee to transact interim business for the Board of Directors: Drs. C. Sidney Burwell, A. J. Carlson (Chairman), Eben J. Carey, L. R. Chandler, A. C. Ivy (Secretary-Treasurer), C. D. Leake, and Fred C. Zapffe.

A. J. Carlson, Chairman; R. B. Allen; L. R. Chandler; A. C. Ivy; C. I. Reed; P. A. Shaffer; G. E. Wakerlin, Secretary.

These suggestions were adopted unanimously by the Executive Council.

College News

University of Illinois
College of Medicine

Dr. Carl E. Black, Jacksonville, Illinois, delivered the third D. J. Davis lecture on medical history November 21. His subject was "Medical Practice Before the Hard Roads." This lecture series was established by the associates and friends of Dr. Davis upon his retirement as Dean of the College of Medicine in 1943. Dr. Davis did much to promote interest and research in the field of medical history during his 30 years of service at the University of Illinois.

The College of Medicine began its first three month refresher course for veterans November 1, 1945, and is taking applications for another course to be given February 1, 1946. In charge of the program are Dr. Ford K. Hick, Associate Professor of Medicine and Assistant Dean in charge of postgraduate instruction in medicine, and Dr. Charles B. Puestow, Professor of Surgery and Assistant Dean in charge of postgraduate instruction in surgery.

Faculty changes: The following members of the faculty have been promoted to the rank indicated: Dr. Arthur R. Cooper and Dr. Roy L. Webb, to professor of anatomy; Dr. Abraham R. Hollender, to professor of otolaryngology; Dr. Warren S. McCulloch, to professor of psychiatry; Dr. William H. Cassels, to professor of surgery; Robert H. Krehbiel, Ph.D., to associate professor of anatomy; Dr. Oliver E. VanAlyea and Dr. Richard W. Watkins, to clinical associate professor of otolaryngology; Dr. Ford K. Hick, to associate professor of medicine; Dr. Theodore J. Wachowski, to associate professor of radiology; Dr. Benjamin D. Braun, to clinical assistant professor of radiology; Dr. Harold C. Lueth, to associate professor of medicine; Dr. James B. Eyerly, to clinical professor of medicine; Dr. Loren W. Avery, to clinical professor of neurology; Dr. Ben W. Lichtenstein, to associate professor of neurology; Dr. Hiram J. Smith and Dr. Carl Apple, to associate professor of ophthalmology; Dr. Louis Bothman, to clinical professor of ophthalmology; Dr. Ralph Spaeth and Dr. Gertrude E. Howe, Cincinnati, to assistant professor of pediatrics; Dr. Carl Ireneus, Jr., to assistant professor of surgery; Dr. Roy O. Riser, to assistant professor of ophthalmology.

This year for the first time the University of Illinois is using the word clinical for its part time faculty members who are in the clinical departments.

Increased interest among women in the profession of medicine is indicated by the jump in their enrollment in the University of Illinois College of Medicine. Thirty-six freshmen women, the largest number in the 64-year history of the college and the largest medical class of women in any co-educational school in the country, launched their professional training last fall.

Last year saw the beginning of the upward swing with 19 women in the freshman class. This year over one-fifth of the freshman class of 166 are women, including an ex-Wave and ex-Wac.

University authorities are well satisfied with the work the women are doing. "The chief trouble with women in medicine," they point out, "is matrimonial." The women are apt to be sidetracked on a trail of domesticity.

To be eligible for admission to the College of Medicine the women must meet the same standards as the men. Applicants are selected on the basis of scholastic record, aptitude tests, and health records. Last fall 7 to 8 times as many women applied as in prewar years when the number of women enrolled varied from 3 to 10.

The average girl entering a career in medicine is older, some 3 years older than the average man starting first year medical studies. Ranging in age from

18 to 34, the average age for the 36 girls is 25. Many of them have worked as laboratory technicians or have done research work in laboratories before continuing their studies.

Most of the girls have already indicated special fields of interest for their medical studies. Several of them plan to become medical missionaries. Research heads another phase of their interest, with obstetrics, pediatrics, nutrition and psychiatry leading the list.

In addition to the 36 freshmen women, there are 19 sophomores, 7 juniors and 10 seniors, totaling 72 women, and ending, at least temporarily, the tradition that a medical college is a man's domain.

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University of Minnesota Medical School

Dr. J. Arthur Myers, Professor of Preventive Medicine and Public Health, has been elected Editor-in-Chief of the Journal of the American College of Chest Physicians.

Dr. Wesley W. Spink, Associate Professor of Medicine, was invited to give the first Annual Newton Evans Lecture in Bacteriology and Pathology at the College of Medical Evangelists on November 29, 1945. His lecture was entitled "Brucellosis: Diagnostic and Therapeutic Considerations."

At the invitation of the Yale Medical Society, Dr. Robert G. Green, Professor of Bacteriology, will present a lecture on "Health and disease in wildlife as exemplified by tularemia," on January 9. During the period of his three-day visit, he will also give seminars on "Immunology of the milk factor"; "Vitamin B_1 inactivation by raw fish"; and Cell-blockade by modified distemper virus."

Dr. Owen H. Wangensteen, Professor of Surgery and Head of the Department, delivered a lecture December 14 before the Alpha Omega Alpha Society at Stanford University Medical School, entitled "Intestinal Obstructions." On December 15 he delivered a lecture before the California Academy of Medicine, San Francisco, entitled "The Ulcer Problem."

A gift of $25,000 was made to the Medical School by the Ebin Foundation of Minneapolis in support of five graduate medical fellowships of $1,000 a year each to be awarded to veterans of World War II immediately.

An electron microscope has recently been installed in Millard Hall at the University of Minnesota Medical School. The following are among the investigations which will involve the use of the microscope: the intracellular identification of a virus-like agent responsible for the high percentage of mammary carcinoma in susceptible strains of mice; microscopic examination of bone, dentin and enamel; a study of the nature of virus inclusions in certain diseases such as vaccinia and herpes; studies of the finer detail of bacteria with diameters of the order of 0.5 microns.

A program has been worked out for the affiliation of a hospital with the medical school for purposes of graduate training in the clinical specialties of medicine.

Conditions for the affiliation of a hospital with the Medical School of the University of Minnesota for purposes of graduate training in the clinical specialties of medicine.

1. The hospital shall have an organized program for the training of interns and residents which is acceptable to the Medical Graduate Committee of the University. 2. Affiliation must be recommended by the head of the University Department concerned and approved by the Medical Graduate Committee. 3. One or more members of the staff of the affiliating hospital must be designated as University Preceptors, responsible for the supervision of such training. 4. Fellows supported by affiliating hospitals shall be expected to devote at least half of their period of graduate training to work in the basic sciences and appropriate clinical departments of the Medical School. 5. Stipends shall be at regular university rates for a period of 3 years. Appointments beyond this period

shall be by special arrangement. 6. In order to insure adequate basic science and clinical training, affiliating hospitals shall provide stipends and tuition for double the period of clinical service which the fellow spends in the affiliating hospital. The payment of stipends may be arranged either through the university or made directly by the hospital. 7. Appointments to such fellowships may be initiated either by the affiliating hospital or by the University Department concerned but must be acceptable to both. Appointees must be eligible for admission to the Graduate School and register as candidates for a Masters Degree. 8. In special circumstances deviations from this program may be authorized by the Medical Graduate Committee upon recommendation of the head of the Medical School Department concerned.

The University of Minnesota Center for Continuation Study announces a series of courses for graduates in medicine whose plans for continuation education were interrupted by military service. The generous financial assistance of the W. K. Kellogg Foundation, Battle Creek, Michigan, has made this program possible.

The courses of study have been arranged for physicians who plan to (1) accept an association with a specialist, (2) obtain a residency, (3) prepare for American Board examinations, or (4) return to practice.

Faculty will consist of representatives from the faculties of the Medical School, other university departments, and the Mayo Foundation, Rochester; in addition, distinguished teachers from other medical centers will participate.

Registration for less than one quarter will not be accepted. Each course will occupy the full time of the registrant. A certificate of attendance will be issued after the completion of each quarter; a statement indicating the subjects studied and a mark of satisfactory or unsatisfactory will be given. Students whose study or attendance record is unsatisfactory will be asked to withdraw.

New York University
College of Medicine

The dean of two major departments, that of biophysics and one on humanities in relation to medicine, is included in the general program of expansion planned at the New York University College of Medicine, New York. In addition the program includes the introduction of a premedical year in the college to graduate physicians in seven instead of eight years after high school. The four points in the program are: (1) Full recognition of medicine as a social science, with emphasis both in teaching and in practice on the environment and psychologic aspects of illness. (2) Increased instruction in the physical sciences of biology, chemistry and especially physics. (3) A planned research program based on the coordinated work of many departments and directed toward the solution of selected major medical problems. (4) A plan of community medical care to provide comprehensive diagnosis and treatment under a prepayment group practice system.

Dr. Donal Sheehan, acting dean of the medical college, said that "emphasis will be placed on the social and psychologic causes of illness and on the effects of living and working conditions on human welfare. These factors are coming to be the chief cause of ill health in modern urban communities. To give the doctor breadth of view he must also know something of the history, the ideals and the economic problems of medicine. To offset the tendency to make the modern doctor a mere technical specialist, a new department dealing with the humanities in relation to medicine is projected."

A teaching affiliation has been established between the College of Medicine and Lenox Hill Hospital. The program will be established on the graduate and postgraduate level, as well as on the undergraduate level. For some years undergraduate elective courses have been given at Lenox Hill by the directors of the surgical services, Drs. Carl Eggers, John C. A. Gerster, Otto C. Pickhardt and DeWitt Stetten, who also hold the posts of clinical professors of surgery at

New York University. In addition, the cardiac clinic at Lenox Hill, under the direction of Dr. Clarence E. de la Chapelle, assistant dean of the New York University College of Medicine, has been utilized for elective work in the junior and senior years. The new affiliation also makes possible the extension of undergraduate teaching.

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Long Island College of Medicine

The Long Island College of Medicine announces the presentation of its Fourth Postgraduate Course in Industrial Medicine to be given during the three week period, January 14 to February 1, 1946. The course will be conducted under the auspices of the Department of Preventive Medicine and Community Health by a group of distinguished leaders in industrial medical practice, authorities in allied fields and members of the faculty of the college.

The dates selected for the course represent a departure from the practice followed in previous presentations in this series which have been given since early in the war in October and November of each year and will permit the enrollment of members of the medical profession expecting to be released during the next few months from service in the armed forces. According to a survey recently published by the Committee on Postwar Medical Service of the American Medical Association approximately one out of five medical officers in service desire to practice industrial medicine on return to civilian life and more than forty per cent of these anticipate the need for special training in this field.

As in former years the main objective of the course is to provide physicians wishing to enter industrial medicine as well as those now engaged in this type of practice an opportunity to become familiar with modern medical procedure and the more recent developments in this rapidly developing specialty. Preference in enrollment will be given to graduate physicians; applications will be accepted also from industrial executives, personnel workers, nurses, engineers, representatives of labor, insurance companies and other groups interested in industrial health.

Instruction in the course will be intensive and practical emphasis will be placed upon health problems of workers under peacetime conditions. Morning, afternoon and evening sessions will be held each day during the three week period and lectures and seminars at the college will be supplemented by clinics and demonstrations in medical departments of cooperating industries, various teaching hospitals and in governmental or other agencies active in the field. During the first week the program will be devoted to Medical Administration in Industry, in the second week to Internal Medicine in Industry and the Occupational Diseases and in the final week to Industrial Surgery. Provision will also be made for a limited number of those enrolled in the course to obtain subsequent additional supervised in plant training in well established industrial medical departments.

The planning and arrangement of the course has been under the direction of the Industrial Medical Advisory Committee of the college of which Dr. John J. Wittmer, Medical and Personnel Director of the Consolidated Edison Company of New York is chairman. Other members of the Advisory Committee are: Dr. S. Potter Bartley, Assistant Clinical Professor of Surgery, Long Island College of Medicine; Dr. Jean A. Curran, President, Long Island College of Medicine; Mr. J. Dewey Dorsett, General Manager, Association of Casualty and Surety Executives; Dr. Thomas D. Dublin, Professor of Preventive Medicine and Community Health, Long Island College of Medicine; Dr. Lydia G. Giberson, Industrial Psychiatrist, Metropolitan Life Insurance Company; Dr. Irving Gray, Chairman Subcommittee on Industrial Medicine, Kings County Medical Society; Dr. Anthony J. Lanza, Associate Medical Director, Metropolitan Life Insurance Company; Dr. Melville H. Manson, Medical Director, American Telephone and Telegraph Company; Mr. Henry D. Sayer,

General Manager, Compensation Insurance Rating Board; Dr. Frederick H. Shillito, Medical Director, Atlantic Division, Pan American Airways and Dr. Cassius H. Watson, Director, Vanderbilt Clnic, Columbia-Presbyterian Medical Center.

A detailed schedule of sessions is in process of preparation and will be available for distribution about November 1st. A tuition charge of $75 will be made for the entire course; special arrangements will also be made for students with special interests and qualifications wishing to enroll for less than the full course. Inquiries should be addressed to Dr. Thomas D. Dublin, Professor of Preventive Medicine and Community Health, 248 Baltic Street, Brooklyn, N. Y.

Dr. Phillips F. Greene, clinical professor of surgery, has been appointed associate dean in charge of the administrative office of the college division at Kings County Hospital. Dr. Greene was formerly professor of surgery and dean of the Yale-in-China National Huing Ya Medical College in Changsha, China. Dr. Duncan W. Clark, Brooklyn, was also named associate dean.

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University of Texas Medical Branch

Dr. B. I. Burns has accepted appointment as Medical Director of the John Sealy Hospital and Affiliated Hospitals of the University of Texas Medical Branch, Galveston. He will have charge of professional activities, and will be aided by Mr. William O. Bohman, Superintendent of the John Sealy Hospital in respect to administrative details. He will also act as consultant in the erection of a new general hospital building as provided by grants from the Sealy and Smith Foundation. Dr. Burns resigned in September as Dean of the Louisiana State University School of Medicine, New Orleans. He will assume his new duties in December.

Dr. George Fahr, Professor of Medicine, University of Minnesota School of Medicine, was the guest speaker at the special conference in Internal Medicine held at the University of Texas Medical Branch November 1st to 3rd. Doctor Fahr will be Visiting Professor of Medicine for the balance of the month.

The Sugar Foundation, Inc., of New York City has made a grant of $1,000 for the support of research work under the direction of W. A. Selle, Professor of Physiology, on the influence of carbohydrates on experimental liver cancer.

The John and Mary R. Markle Foundation has granted $7,000 to continue the support for two years of the study of filariasis under the direction of Dr. J. Allen Scott, Associate Professor of Preventive Medicine.

Dr. George R. Herrmann, Professor of Internal Medicine, was a guest speaker recently in Mexico City before the Sociedad Mexicana Medicina Interna, and the Sociedad Cardiologia.

The Regents of the University of Texas have completed arrangements with the Sealy and Smith Foundation for the John Sealy Hospital, Galveston, for the construction of a $250,000.00 addition to the Rebecca Sealy Nurses Residence at the Medical Branch.

Harold Blum, Ph.D., of the United States Public Health Laboratory of Bethesda, Maryland, will conduct a special conference at the University of Texas Medical Branch, Galveston, on the "Influence of Sunlight on Carcinogenesis" on January 8th. Doctor Blum has recently been awarded a Guggenheim Fellowship for the study of thermodynamic factors in evolution.

Donald Duncan, Ph.D., Professor of Anatomy at Louisiana State University Medical School, New Orleans, has accepted appointment as Professor of Anatomy and Chairman of the Department of Anatomy at the University of Texas Medical School at Galveston. Doctor Duncan will assume his new post on February 1st. Doctor Duncan was formerly on the staff of the Galveston school.

The Lilly Research Laboratories, Indianapolis, Indiana, have made a grant of $2,500 to the University of Texas

Medical Branch, Galveston, to establish a training fellowship in tissue culture, with special reference to the reticuloendothelium system, under the direction of Charles M. Pomerat, Professor of Anatomy and Director of the Tissue Culture Laboratory.

The National Foundation for Infantile Paralysis, Inc., has made a grant of $3,500 to the University of Texas Medical Branch to support the studies of Dr. A. Packchanian on virus transmission in small animals, in order to try to devise a rapid diagnosis procedure, and to assist in screening tests in therapy. Dr. Packchanian is Director of the Laboratory of Microbiology at the Medical Branch.

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Western Reserve University School of Medicine

The Elisabeth Severance Prentiss Foundation of Cleveland has made a grant, which will probably amount to $500,000, to finance a greatly expanded department of biochemistry in the School of Medicine.

The chair of biochemistry was left vacant recently with the appointment of Dr. Victor C. Myers as head of a new department of clinical biochemistry. Operating the two new departments, the School of Medicine will follow the British pattern of having one department of biochemistry to carry on research and give instruction in chemistry as it affects all forms of life, and another to perform a similar function as it affects more direct clinical observation and diagnosis of human illness.

Mrs. Elisabeth Severance Prentiss, who died in January, 1944, was one of Cleveland's leading philanthropists, having during her lifetime given generously to St. Luke's Hospital, Western Reserve, the Cleveland Museum of Art, the Cleveland Medical Library, and other institutions. The Foundation has made various gifts to the university, more recently making possible the creation of The Elisabeth Severance Prentiss chair in public health at the School of Medicine.

The School of Medicine at Western Reserve University, the Academy of Medicine and 18 hospitals comprising the Cleveland Hospital Council will cooperate in providing special training for three different groups of doctors in need of refresher courses. Details of the integrated program were announced today by Dr. Robert F. Parker, associate professor of medicine and chairman of the University Committee setting up the medical school's contribution to the program.

The program is designed to be flexible enough to meet the needs of the graduate physician whose hospital training was interrupted, the doctor who requires a refresher course in civilian medical practices, and the civilian doctor who wants an intensive brush-up on new technique. According to the Academy of Medicine, approximately 800 Cuyahoga County doctors were called to the armed services, with only 75 per cent of them thus far returned to civilian practice. The first phase of the program, according to Dr. Parker, will be handled by individual hospitals.

Present information indicates that additional internships and residencies will be provided at each hospital within the capacities of its clinical facilities.

The second phase of the over-all program as outlined by Dr. Parker has been developed for ex-Army and Navy doctors who have completed two or more years of hospital training. For them, the medical school will offer a three-month refresher course covering the fields of medicine, pediatrics and general surgery. Dr. Parker cited two typical cases for whom the refresher course is designed. No. 1 is the doctor with three years' general practice and nearly five years of general Army practice behind him. He will brush up on pediatrics, his original special interest. The second doctor cited by Dr. Parker has seen very little medicine in the Army for four years except first aid and medical and surgical diagnosis under combat conditions. He is interested in a more general program. Students may enroll in the

refresher course on the first of any month in which there is a vacancy. The program will include a series of seminars in various topics, with free time allowed for reading and consultation with members of the staff.

The third phase of the program is a "graduate fortnight" for both former military medical officers and the civilian doctor who has been too hard-pressed during the war years to keep up with latest developments. This is under a special committee of the Academy of Medicine.

Dr. John L. Caughey, Jr., New York, who has for four years been studying the human constitution in relation to disease at Presbyterian Hospital, New York, has been named assistant dean, a newly created position. Dr. Caughey will supervise admissions and keep in touch with the progress of the students. He will also continue his research.

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University of Illinois Graduate School Research Fellowships in Medicine, Dentistry, and Pharmacy

The Graduate School of the University of Illinois has established four research fellowships to be awarded for one year in the fields of Medicine, Dentistry, and Pharmacy in Chicago at a stipend of $1,200 per year (calendar year with one month's vacation). Fellows are eligible for reappointment in competition with the new applicants.

Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. This training may have been acquired in any one of the following ways, or the equivalent thereof:

1. Work leading to the B.S. and M.D. degrees (in some instances the candidates would have the M.S. degree, or an additional year or two of hospital training beyond the intern year).

2. Work leading to the B.S., M.S. and D.D.S. degrees.

3. Work leading to the B.S. or B.A. degree in a four year collegiate course and to the D.D.S. degree.

4. Work leading to the B.S., D.D.S. and M.D. degrees.

5. Work leading to the B.S. or B.A. degree followed by a degree in pharmacy (4 year course).

6. Three years of collegiate work, followed by a degree in pharmacy (4 year course) and M.S. degree in pharmacy.

Candidates should indicate the field of research in which they are interested and submit complete transcripts of their scholastic credits, together with the names of three former science teachers as references. Appointments will be announced January 1 or soon thereafter each year. The fellowship year begins September 1.

Formal application blanks may be secured from the Secretary of the Committee on Graduate Work in Medicine, Dentistry, and Pharmacy, 1853 West Polk Street, Chicago 12, Illinois.

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University of Maryland School of Medicine

Lt. Col. D. James Greiner has returned from active duty with the Armed Forces and resumed his position of Associate Professor of Pathology. Colonel Greiner served for more than three and a half years overseas as a member of the 142nd General Hospital in the Fiji Islands, on Bougainville, and Calcutta, India. Dr. William L. Guyton has been added to the staff of the Department of Pathology as instructor. Dr. Seymour W. Rubin has been appointed Assistant in Pathology.

Colonel Walter D. Wise recently was released from active duty with the Armed Forces, and has resumed his position as a Professor of Surgery and Chief of Staff of the Mercy Hospital. Colonel Wise served for sixteen months as Medical Director of the Maryland State Selective Service, and from August 11, 1945, until relief from active duty as Consulting Surgeon for the Third Service Command.

Major Harry M. Robinson returned from active duty with the Armed Forces, and resumed his position as Assistant

Professor of Dermatology. Major Robinson served with the 142nd General Hospital overseas in the Southwest Pacific area, and India.

Lt. Colonel Walter L. Kilby, after an absence of more than three years overseas with the 142nd General Hospital, has returned and resumed his duties as Professor of Roentgenology and Director of the Department of Roentgenology in the University Hospital. Colonel Kilby was on active service from April 20, 1942, in the Southwest Pacific and India, and was on duty at the Woodrow Wilson General Hospital, Staunton, Virginia, when finally relieved in October.

Dr. Frederick B. Manderville has been appointed an Associate Professor of Roentgenology.

Dr. R. Dale Smith, Head of the Department of Biology at Gonzaga University, Spokane, Washington, has accepted the position of assistant professor with the department of anatomy.

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University of Virginia
Department of Medicine

Dr. Chalmers Laughlin Gemmill, Associate Professor of Physiology at Johns Hopkins Medical School and for the past four years on leave of absence as Commander in the Medical Corps, USNR, in charge of aviation medicine research at the Naval Air Station in Pensacola, Florida, has been appointed Professor of Pharmacology as successor to the late Dr. James Alexander Waddell.

The faculty of the School of Medicine gave a Home-Coming reception for the personnel of the Eighth Evacuation Hospital, recently returned from service in North Africa and Italy, on November 11th. Brief talks were made by Dean H. E. Jordan, Col. E. C. Drash, Captain Ruth Beery, and Chaplain William H. Laird. Views of the various activities of the Unit were shown by Captain W. P. Snavely.

The Department of Medicine of the University of Virginia in conjunction with the Medical College of Virginia is planning to offer an intensive two week refresher course in general medicine every three months for the next year. These courses will be comprised of lectures, clinics, ward rounds, clinico-pathological conferences and round table discussions. The first course ran from December 3 to December 15, 1945, at the University of Virginia. Any physician wishing further details should address Box 1725, University Station, Charlottesville, Virginia. Those desiring information about the course to be given by the Medical College of Virginia in March and September should address Dean J. P. Gray, Medical College of Virginia, Richmond. While this course is planned primarily for returning veterans civilians will be accepted insofar as places are available to a limit of fifty.

The Virginia Society for Crippled Children and Disabled Adults, on October 2nd awarded to Dr. Hugh Page Newbill for the work of the Anti-Convulsive Clinic the sum of $7,500 for the year 1946. From other sources so far this year this clinic has received donations in the amount of $2,629.

The sum of $10,000 has been provided in the will of the late Mrs. Sallie B. Twyman as a memorial to her late husband for the establishment in the Medical School of the Frederick W. Twyman Fund, the income to be applied for research in cardiovascular disease under the direction of the Department of Internal Medicine.

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Southwestern Medical College

Southwestern Medical College manifested its appreciation for the cooperation of the Medical Service Society of Dallas at a luncheon at the Melrose Hotel in Dallas held on Saturday, December 15, 1945. Dr. Edward H. Cary, President of the Southwestern Medical Foundation, presented the bronze plaque to Mr. W. Brock Wright, President of the Medical Service Society.

"This group has done an outstanding job of service to medicine in Dallas,"

Dr. Cary said in presenting the award. "This group of men representing the pharmaceutical houses have banded together here for excellent purposes. They have done much to help in the interests of Southwestern Medical College and of all medical Dallas. There should be a Medical Service Group in every city in America."

The Medical Service Society of Dallas was formed a little over two years ago. Men who live in Dallas and represent the various pharmaceutical houses of America comprise the membership of the group. They meet twice a month. The meeting on the first of the month is the business meeting. The regular monthly luncheon meeting is held on the third Saturday of each month. The Dallas Chapter adopted the Medical Library of Southwestern Medical College as a project and have donated many valuable volumes to the collection. A Medical Library Banquet was held last spring and attended by all the allied groups in medicine. Several thousands of dollars was raised for the library at that time.

This fall, during the drive to raise a $1,300,000 operating fund, the Medical Service Society went to work. Their quota was $18,500, which they exceeded in the drive by over twenty thousands of dollars. That splendid cooperation prompted the Southwestern Medical Foundation in the person of Dr. Cary to make the presentation of the award.

Other chapters of Medical Service are being organized. Chapters are already operating in Houston and Fort Worth. Plans are being made for active chapters in Denver, New Orleans and other metropolitan centers.

Simon Edward Sulkin, Ph.D., has been promoted to be professor of bacteriology and immunology of Southwestern Medical College and chairman of the department. Dr. Warren Andrew, associate professor of histology and embryology, Southwestern Medical College, Dallas, will carry on reasearch during the next four months at the laboratory for histologic research of the medical school of the National University of Uruguay, Montevideo, it was reported in September. Dr. Andrew's work, which involves a study of microscopic changes in the body with advancing age, will be done in collaboration with Dr. Julio M. Sosa, director of the laboratory, and their findings will be published in both Spanish and English. The project is under the auspices of the Uruguayan government and of the U. S. Department of State.

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University of Utah
School of Medicine

The Administrative Committee of the School of Medicine which formerly acted in the deanship capacity has, at its request, been dissolved. Dr. H. Leo Marshall, Professor and Head of the Department of Public Health and Preventive Medicine, has been named Acting Dean.

Upon recommendation of the Executive Committee of the Medical School and with the approval of the Board of Regents of the University of Utah a separate Department of Anesthesiology has been established in the School of Medicine. Dr. Scott M. Smith has been named Assistant Clinical Professor of Anesthesiology and Acting Head of the Department.

The Givaudan-Delawanna Corporation has granted to Dr. Philip B. Price, Professor of Surgery, $5,250.00 for the investigation of skin disinfection.

The graduating class of 1944 has established the Intermountain Surgery Lectureship. It is planned to invite outstanding surgeons to fill this lectureship.

The Senior Class has initiated a successful campaign to secure funds to add to the journal subscription of the Medical School Library. They have assessed themselves $20.00 each for this purpose and from this source and others interested in the Medical School have now collected more than $3,500.00.

Dr. Randolph T. Shields, formerly Surgery Resident at the University of Pennsylvania and more recently Major in the U. S. Army Medical Corps in

the China-Burma-India theater, has been appointed instructor in Surgery.

The medical students on active duty with the armed forces, assigned to this institution for the study of medicine, have voluntarily initiated a payroll contribution plan whereby each student in the military service donates $2.00 a month towards a student-loan fund to be used to help finance medical education of needy civilian students. At the present time this fund totals over $3,500.

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University of California
Medical School

Dr. Nathan Malamud, Ann Arbor, Mich., has been appointed neuropathologist at the Langley Porter Clinic and associate clinical professor of psychiatry at the Medical School. While an excellent neuropathologic laboratory was constructed when the clinic was built, this is the first appointment of a neuropathologist, which, it is expected, will further the plans to attack the problem of mental disease from every angle. Neuropathologic material will be received from all the state hospitals. The Langley Porter Clinic will not only be coordinated with the medical school of the university but will be the focus for these studies for the state hospital system, thus enabling the clinic to enlarge its service to the state. Dr. Malamud graduated at McGill University Faculty of Medicine, Montreal, in 1930.

Plans for the establishment of a new medical school in Los Angeles were under way following action of the regents of the University of California authorizing Robert G. Sproul, president, to seek funds from the state legislature for the purpose. Recognizing the need for additional facilities in the southern part of the state, the regents unanimously approved a recommendation to provide full training in medicine in connection with the Los Angeles campus of the university. Only one third of the doctors needed annually in southern California can be trained by the existing medical school there, according to the University of California *Clip Sheet*. University officials estimated that some sixty students would receive instruction in the new school each year, which would nearly equal the present facilities of the university on the San Francisco campus. Depending on action by the legislature, it may be from two to three years before the full curriculum can be offered in medicine, but lower division work may begin within a year, officials said.

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University of Colorado
School of Medicine

Faculty changes: Dr. John W. Amesse, professor of clinical pediatrics emeritus, and John M. Barney, professor of medicine emeritus, both effective September 1. Dr. Arthur J. Markley was also recently made professor of dermatology emeritus. Dr. Osgoode S. Philpott was recently appointed professor and head of the department of dermatology.

Appointments: Dr. Robert S. Liggett as assistant professor of medicine and assistant dean and Dr. Emmett A. Mechler as assistant professor of obstetrics and gynecology.

Establishment of a major medical research center in Denver as a cooperative venture of the School of Medicine, the University of Denver and other institutions is now being considered. One branch would be designed to further medical science and improve public health in the area and would be operated in connection with the Colorado medical school and the Colorado General Hospital.

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University of Rochester
School of Medicine

An endowment fund of $2,153,954 has been established for a neuropsychiatric clinic. The fund is in addition to the building fund for the new structure, the cost of which is tentatively estimated at about $600,000. Construction of the clinic is expected to start early in 1946 and it is hoped that the building will be completed within a year. The new structure will face Crittenden Boulevard adjacent to Strong Memorial Hospital and

will be joined to the hospital by a corridor. It will be five stories high with a solarium on top and will contain physical and occupational therapy and recreational facilities for patients and ample laboratory space for active research and investigation. A committee of the medical school faculty has been surveying the field throughout the country to select a professor of psychiatry to head the clinic and help prepare plans for the facilities and staff organization. The clinic will be operated as a unit of the medical school and coordinated with the university's Strong Memorial and Municipal hospitals, the teaching hospitals of the school. It is contemplated that it will be used for the study and care of persons having functional nervous disorders rather than for those with extreme mental ailments. Provision will be made for beds for about 70 inpatients, and extensive use of the clinic for ambulatory patients is planned. Funds for the project were given by Mrs. Helen W. Rivas of LeRoy.

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University of Texas
Medical Branch

The Texas Branch of the American Bacteriologists met here November 24th. A symposium was held on murine typhus and on antibiotics.

Nathan W. Shock of the Section of Gerontology of the U. S. Public Health Service, Baltimore, was guest lecturer December 3rd and 6th. He spoke on "Experimental Studies of Paths of Displacement of the Acid Base Equilibrium of the Blood," and on "Some Physiological Observations on Adolescence."

Professor E. V. Cowdry, Professor of Anatomy, Washington University, St. Louis, and Director of Research of the Barnard Free Skin and Cancer Hospital, held a special seminar on carcinogenesis at the Tumor Clinic December 21st.

In commemoration of the centennial of the birth of William Conrad Roentgen, and of the semi-centennial of his discovery of x-rays, a special exhibit of material relating to radiology was prepared for the Medical Branch Library. The exhibit included pioneer publications by Roentgen, the Curies, and others demonstrating the exploitation of radiant energy in medicine and indicating the relation of Roentgen's discoveries to knowledge of atomic energy.

Dr. B. I. Burns, former dean of the School of Medicine, Louisiana State University, has been appointed medical director of the John Sealy Hospital as of December 1.

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Wayne University
College of Medicine

The Smith, Kline and French Laboratories have made a grant of $2,500 a year for two years to Dr. Amedeo S. Marrazzi, professor and head of the Department of Pharmacology and Therapeutics for the further study by electrical methods of drugs acting on the autonomic and central nervous systems.

Among refresher courses offered at Wayne for ex-servicemen is a new series of courses scheduled to start January 2, 1946. The courses are designed specifically for those returning veterans who were in private medical practice prior to their entry into the armed forces. The fields of study cover a wide variety of subjects ranging from anatomy to physiological chemistry, dermatology, psychiatry and hematology.

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Tulane University of Louisiana
School of Medicine

Tulane has received a bequest from Miss Sarah Henderson of $1,075,000 for endowment of the chair of tropical medicine and for the improvement and changes in the department. William B. Wendel, Ph.D., associate professor of chemistry at the University of Tennessee College of Medicine, has been appointed professor and head of the department of biochemistry. Dr. Champ Lyons, formerly a member of the staff of Harvard Medical School and recently consultant to the secretary of war, Hemolytic Streptococcus Commission, has been appointed associate professor of surgery.

St. Louis University
School of Medicine

Dr. William E. Sauer, professor of otolaryngology since 1925, was on account of his recent retirement awarded the Distinguished Service Professorship, the first appointment of its kind. Dr. Sauer has been director of the department of otolaryngology since 1925. He will be succeeded as director by Dr. Bernard J. McMahon, associate professor in the department. Other changes in the medical school include the appointment of Dr. Joseph A. Hardy, assistant professor of gynecology and obstetrics, as director of the department, filling the vacancy left by the recent death of Dr. William H. Vogt. Dr. Garold V. Stryker, assistant professor of dermatology, was named director of the department to succeed Dr. Joseph Grindon, who resigned in 1944 because of age.

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Emory University
School of Medicine

Dr. William C. Warren, associate professor of clinical otorhinolaryngology and chief of the clinical department, has been appointed professor of otology and rhinolaryngology and chairman of the department to succeed Dr. James C. McDougall. Dr. Robert M. Paty has been named professor of surgery and acting head of the department. He will continue as associate dean of the medical school. Dr. Russell Oppenheimer, who recently retired as dean, has returned to the school after a three months' leave to take over his activities as full time professor of clinical medicine. Dr. Francis P. Parker has returned to the school as assistant professor of pathology, the position which he held prior to entering military service three years ago.

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Temple University
School of Medicine

Dr. Theodore L. Chase, of Reno, Nevada, formerly a distinguished surgeon of Philadelphia, has given Temple University $450,000 for the establishment and endowment of a Surgical Research Foundation in memory of his wife, Dr. Agnes Barr Chase, a native Philadelphian who was graduated from the Temple University Medical School in 1909. She died in April, 1942.

At the request of the donor who practiced surgery in Philadelphia for 35 years, "the efforts of the Agnes Barr Chase Surgical Research Foundation are to be directed to research in general surgery with the particular emphasis on the study of the cause or causes and treatment of cancer."

According to the present preliminary plans sketched by Dr. Chase and Dr. William N. Parkinson, Dean of Temple, laboratories will be set up in the Medical School while clinical application will be pursued in the Temple University Hospital.

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The University of North Dakota
School of Medicine

The State Legislature appropriated, last winter, $250,000 for a Science Building, which is taken to mean a building that will house the work that we are now doing—that is, the work of the laboratory medical sciences. The Legislature also passed a bill that amounts to enabling legislation. It established a State Medical Center at the university. This means a clinic and a hospital of sufficient size to take care of at least a part of the welfare work of the state when hospitalization and medical care are involved and, to make clinical teaching possible. It also created a State Medical Center Advisory Council of nine members. The law implies that this is to be a permanent board, but at the present time its duties can be only an investigation and study of all of the problems involved.

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University of Michigan
Medical School

Elizabeth C. Crosby, Ph.D., professor of anatomy, has been appointed by the board of regents as the Henry Russel Lecturer for 1945-1946. Dr. Crosby is the first woman to be thus honored at the

University of Michigan since the annual appointments were begun in the fall of 1925. The honor goes each year to the faculty member adjudged to have made the most significant contribution to the advancement of the field in which he is specializing. Besides the honor of giving the Henry Russel Lecture next May, the selection also includes a stipend paid from the endowment established by Henry Russel, LL.B., of Detroit. Dr. Crosby has been a member of the University of Michigan faculty since 1920. She teaches neuroanatomy to freshmen and graduate students.

The department of postgraduate medicine will devote a course in internal medicine in January and February to "Clinical Applications of the Basic Sciences." The preclinical faculty and, to a great extent, staff members of the clinical departments will do the teaching. The various aspects of the fundamental sciences which have bearing on the practice of medicine will be emphasized.

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Boston University
School of Medicine

Dr. Donald G. Anderson has been appointed dean to succeed Dr. Charles F. Branch who resigned recently. Dr. Reginald H. Smithwick has been appointed professor and chairman of the department of surgery, and surgeon-in-chief of the Massachusetts Memorial Hospitals. Dr. Hans O. Haterius, late of Wayne University, has been appointed professor and head of the department of Physiology. Dr. George L. Maison is also a new addition to this department.

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University of Tennessee
School of Medicine

A grant has been made by Sharp and Dohme, Inc., to the department of bacteriology for a study of sulfonamide drugs in the control of fowl typhoid infection. The investigation will be conducted by Darlington F. Holtman, Ph.D., professor of bacteriology and head of the department.

Dr. Thomas D. Moore, Memphis, has been appointed professor and head of the department of urology, effective December 1. Dr. George R. Livermore, who has been head of the department since 1916, has asked to be relieved of his responsibilities as head of the department. He will continue as a professor after a temporary leave of absence.

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Vanderbilt University
School of Medicine

Resolutions paying tribute to Dr. Waller S. Leathers and Dr. Lucius E. Burch for their long service to Vanderbilt were adopted October 31 at the first fall meeting of the school faculty. Dr. Leathers, who retired in July, had been dean of the medical school and head of the department of preventive medicine and public health since 1928. Dr. Burch, who also retired June 1, graduated at Vanderbilt in 1896, joined the faculty in 1902 as professor of gynecology and was dean of the school from 1914 until 1925, when he resigned as dean to continue as head of the department of obstetrics and gynecology.

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University of Chicago
Medical School

To celebrate the twentieth anniversary of his chairmanship of the department of surgery, residents, present and past members of the department, gave a dinner, December 4, in honor of Dr. Dallas B. Phemister. A special bound volume of the December issue of the Annals of Surgery, which consisted of contributions by Dr. Phemister's pupils and former associates, was presented to him.

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Northwestern University
Medical School

Drs. John A. Wolfer and Karl A. Meyer, both associate professors of surgery, were recently promoted to professors of surgery. Dr. Wolfer has been a member of the faculty there since 1910. Dr. Meyer has been a member of the faculty since 1926. He is also medical superintendent of Cook County Hospital.

Bowman Gray
School of Medicine

The medical relations division of Camel Cigarettes has given the Bowman Gray School of Medicine, Winston-Salem, an additional grant of $6,000 to support research on tobacco by William A. Wolff, Ph.D., associate professor of pathology. This grant brings to a total $22,651 awarded for the support of this work. A grant of $2,500 has been received from the John and Mary R. Markle Foundation to aid the research conducted by Dr. David Cayer, assistant professor of medicine, on the study of nutrition. Dr. Cayer formerly was associated with Dr. Julian M. Ruffin of the Duke University School of Medicine, Durham, in the study of vitamin levels in various deficiency states.

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Louisiana State University
School of Medicine

Dr. William E. Smith, who assumed the deanship, professor and head of the department of anatomy in September, succeeding Dr. B. I. Burns, has resigned all these positions. Dr. George W. McCoy, professor and head of the department of public health and preventive medicine, has been appointed acting dean.

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University of Georgia
School of Medicine

A State Gastrointestinal Clinic has been opened in the outpatient department of the University Hospital. The new unit will be a division of the cancer clinic designed primarily as a diagnostic gastrointestinal clinic with the main objective being the early diagnosis of cancer of the gastrointestinal tract.

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Georgetown University
School of Medicine

Dr. Wallace M. Yater has resigned as professor and director of the department of medicine and as head of the same department at Georgetown University Hospital and Gallinger Municipal Hospital.

Harvard Medical School

Col. Eugene C. Eppinger, formerly physician to students, has been appointed assistant dean in charge of courses for graduates. He succeeds Dr. Frank R. Ober, who has been doing this work since 1928. The new appointment will be effective January 1. Dr. Eppinger will take over the direction of all courses for graduates, including the refresher courses for returning veterans.

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Solomon Memorial
Research Foundation

The Dr. Jerome D. Solomon Memorial Research Foundation has recently been created to "conduct scientific investigation in the field of medicine and surgery for the relief of human suffering, irrespective of race, color or creed." The foundation is named for Captain Solomon, who died of scrub typhus at Cape Sansapor, New Guinea, September 16, aged 28. Dr. Solomon had graduated at the University of Illinois College of Medicine in 1941, becoming in the same year a lieutenant in the medical corps of the Army of the United States. He entered active duty in 1942. Joseph D. Solomon, father of Dr. Solomon, is honorary president of the new foundation. Other officers include M. Z. Holland, president; N. R. Levin, vice president; Dr. Joseph L. Wilkey, Chicago, vice president; Irv Kupcinet, Chicago *Daily Times* columnist, secretary; Zena L. Graham, assistant secretary, and William Lakritz, treasurer. Members of a medical advisory board are Drs. Morris Fishbein, chairman, Ludvig Hektoen, Andrew C. Ivy, Raymond W. McNealy, Karl A. Meyer and Samuel J. Hoffman. Research will be carried out at the Hektoen Institute, which is affiliated with the foundation. Fellowships will be awarded in projects recommended by the medical advisory committee. The foundation is now conducting a membership drive at $10 a person, and voluntary contributions are requested.

Book News

Rorschach's Test:
II. A Variety of Personality Pictures

By Samuel J. Beck, Ph.D., Head of Psychology Laboratory, Department of Neuropsychiatry, Michael Reese Hospital, Chicago; Associate Professor of Psychology, Northwestern University. Foreword by Roy R. Grinker, M.D. Grune & Stratton, New York. 1945. Price, $5.

This volume is devoted to the stage of interpretation of this test. Many illustrative cases are cited. The book will no doubt awaken more interest in the test and help to give it the place it should have in this field of testing.

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A Manual of Surgical Anatomy

(Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council.) By Tom Jones and W. C. Shepard. W. B. Saunders Company, Philadelphia. 1945.

This volume is one of a series developed to furnish the medical departments of the U. S. Army and Navy with compact presentations of necessary information in the field of military surgery. Students, as well as practitioners, will find this a most valuable addition to the working library. It is an outstanding piece of work.

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Pathology of Tropical Diseases

By J. E. Ash, Colonel, M.C., U.S.A. Director, Army Institute of Pathology, and Sophie Spitz, M.D., C.S., A.U.S., Pathologist, Army Institute of Pathology, Army Medical Museum. W. B. Saunders Company, Philadelphia. 1945. Price $8.

An atlas, beautifully done; a timely book, classic in its scope and mode of presentation which every student of tropical medicine should have.

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A Textbook of Surgery

By American Authors. Edited by Frederick Christopher, M.D., Associate Professor of Surgery, Northwestern University Medical School. Ed. 4. W. B. Saunders Company, Philadelphia. 1945. Price, $10.

Better than ever—and it has always been a standard text in surgery. Many new sections have been added, one on military surgery; another on chemotherapy in surgical infections; actinomycosis; indolent ulcers; burns; shock, etc., etc.

Human Embryology:
Prenatal Development of Form and Function

By W. J. Hamilton, M.D., Professor of Anatomy at the Medical College of St. Bartholomew's Hospital; J. D. Boyd, M.D., Professor of Anatomy in the University of London at the Medical College of London Hospital, and H. W. Mossman, Ph.D., Associate Professor of Anatomy, University of Wisconsin Medical School. The Williams & Wilkins Company, Baltimore. 1945. Price $7.

An excellent book. Profusely illustrated; rather too many references to literature.

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The Herbal of Rufinus

Edited from the unique manuscript by Lynn Thorndyke, assisted by Francis S. Benjamin, Jr., University of Chicago Press, Chicago. 1945. Price, $5.

Presented in the original Latin. A wonderful contribution to botany rather than medicine, preserving for all time the work done by Rufinus in relating his studies and observation of plants. The book also presents a hitherto unknown version of Dioscorides.

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A Synopsis of the Diagnosis of the Surgical Diseases of the Abdomen

By John A. Hardy, M.D. Ed. 2. The C. V. Mosby Company, St. Louis. 1945. Price, $5.

A handy small volume containing much information. It should appeal to those who are specially interested in this field of medicine.

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Mitchell-Nelson Textbook of Pediatrics

Edited by Waldo E. Nelson, M.D., Professor of Pediatrics, Temple University School of Medicine, with the collaboration of forty-nine contributors. Ed. 4. W. B. Saunders Company, Philadelphia. 1945. Price, $10.

A fitting memorial to the late Dr. A. Graeme Mitchell, the original author of this fine work. The book has been rewritten completely and is virtually a new textbook of pediatrics.

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Clinical Application of the Rorschach Test

By Ruth Lochner and Florence Halperin, New York. Ed. 2. Grune & Stratton, New York. 1945.

Revised and enlarged.

Hypoanalysis

By Lewis R. Wolberg, M.D., Lecturer in Psychiatry, New York Medical College, with a foreword by A. Kardiner, M.D., Assistant Clinical Professor of Psychiatry, Columbia University. Grune & Stratton, New York. 1945. Price, $4.

The author presents an account of his hypoanalytic treatment of a patient ill with a severe emotional problem.

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Hematology

By Willis M. Fowler, M.D., Professor of Medicine, University of Iowa, with a chapter by Elmer L. DeGowin, M.D., Assistant Professor of Medicine, University of Iowa. Paul B. Hoeber, Inc., New York. 1945. Price, $8.

Emphasizing clinical aspects, diagnostic methods and treatment, discussed from the standpoint of internal medicine rather than a specialty. Based on the experience gained through many years of teaching.

◆ ◆

Laboratory Outline of General Biology

By William C. Beaver, Ph.D., Head of the Department of Biology, Wittenberg College, Springfield, Ohio. Ed. 3. Price, $2.

For biology students.

Atlas of Surgical Approaches to Bones and Joints

By Toufick Nicola, M.D., Professor of Orthopedics, New York Policlinic Postgraduate School and Hospital, with a foreword by Norman T. Kirk, Major General, U. S. Army, the Surgeon General. The Macmillan Company, New York. 1945. Price, $5.

Using the illustrations in this atlas as a guide, it would seem that almost any tyro in surgery should be able to perform the operations described. As a quick reference, the atlas will prove invaluable. The student will find it very useful to give him a clear picture of the operative procedures described. It should be a "must" book for him.

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Diseases of the Nose, Throat and Ear, Including Bronchoscopy and Esophagoscopy

Edited by Chevalier Jackson, M.D., Honorary Professor of Broncho-esophagology, Temple University School of Medicine, and Chevalier L. Jackson, M.D., Professor of Broncho-esophagology in Temple University. With the collaboration of 64 outstanding authorities. W. B. Saunders Company, Philadelphia. 1945. Price, $10.

So complete there is nothing left to say. Well written; well illustrated; giving full coverage of the subject.